The ELFIN FOREST

FRANCIS M. FULTZ

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1. Frontispiece: Fire-break Cut Through a Solid Growth of Chaparral.

THE ELFIN-FOREST OF CALIFORNIA

By FRANCIS M. FULTZ

AUTHOR OF THE FLY-AWAYS, ETC.

With 123 Illustrations
From Photographs

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DEDICATED
TO THE RANGERS
OF
THE ELFIN-FOREST

PREFACE

For many years I have been wandering among the mountains of Southern California, so it is with some degree of assurance that I write about them and their wonderful forest-cover. And for this reason, too, what I shall have to say is largely out of my own personal experience and investigation.

The Chaparral is very dear to me now, but when I first "hit the trail" that led me into it, it did not strike me at all favorably. And everything about it was so new and strange that I almost felt as if I were in another world. Of the "brush" of which it was composed, there was scarcely a familiar form, and it was all so harsh and unyielding that it aroused a certain feeling of hostility within me. I knew, however, that the feeling was unjust, for I was fully aware the Chaparral was a forest-cover designed by Nature as the best possible means for the conservation of the land. I knew, too, the proper thing for me to do was to down the unfriendly feeling and make an honest effort to get acquainted.

Naturally, I sought books on the subject, but found none that gave me immediate help. There were botanical treatises out of which one might dig the technical information—if one possessed the inclination and the necessary training for doing so. But of books that talked in a familiar way and gave common, everyday information, there were none. Not that much of such matter has not been written; for there has. But it is scattered through many books and other publications. The only work devoted exclusively to the subject which has so far appeared is a pamphlet of 48 pages issued by the United States Department of Agriculture, through the Forest Service, by Fred G. Plummer, entitled "Chaparral." Although very brief, it is a very helpful contribution—especially as regards the Chaparral as forest-cover—and I acknowledge my obligations to it for much information of a statistical nature which I have made use of. But it does not contain, and was not intended to give, that intimate and familiar knowledge of the shrubs that I wanted. Not finding any general source of knowledge, I was forced to start in and get the desired information from "here, there, and everywhere."

I have freely made use of assistance wherever I could get it, and I am under obligations to many persons for "helping me on my way." That I do not here give the list is because it is such a long one that I would be sure to miss some deserving names. Without doing anyone an injustice, however, I may mention the Botanical Section of the Los Angeles Academy of Science, which, through its members, has been a constant source of help and inspiration.

No pretense is made that the subject is herein fully covered, or exhaustively treated. Neither is the book intended to be a scientific or technical treatise. Botanical descriptions are studiously avoided, and botanical names are given only that anyone wishing to get direct botanical information and technical descriptions may the more easily do so.

Most of the matter originally appeared serially in the Illustrated Magazine of the Los Angeles Times, where it attracted the attention of many persons who wrote me personally, voicing their appreciation of the work, and expressing the hope that it would be published in book form. This encouraged me to get the matter in shape for the book which is here presented. The number of illustrations has been more than doubled.

In conclusion, I wish to beg the indulgence of my readers for any misstatements and errors of any nature which I may have made; and to express the hope that what I here present will add something to the general knowledge of the "Elfin-Forest," will be a help to those who want to know more of its wonders, and will arouse an interest in the unique and wonderful forest-cover with many who now know it not.

Los Angeles, Calif.
January 1, 1923. FRANCIS M. FULTZ.

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THE ELFIN-FOREST OF CALIFORNIA

THE ELFIN-FOREST OF CALIFORNIA

I

CHAPARRAL

THE fame of California's Giant-Forest has spread around the world; but who, outside of a few botanists and those most interested in the conservation of our land, knows of the wonders of the Elfin-Wood? Yet this dwarf forest of the Southwest is really the more marvelous of the two.

While California does not have the only forest of elfin-trees in the world, it has by far the most extensive stretch of the dwarf woodland, excepting only that of Australia, which is largely made up of elfin-eucalyptus, and which is said not to be so uniform in growth and development as the elfin forest-cover of our mountains and foothills. There are smaller areas on the coast of Chile, along the shores of the Mediterranean in Europe and Asia, and eastward into Turkestan, and on the shores of Africa west of the Cape of Good Hope. Each region has its own particular dominating group or groups of shrubs—acacias in the East; eucalyptus in Australia; scrub-oaks, buckthorn and others to be mentioned later, in California.

2. Clearing the Ground for a Fruit Ranch is no Sport.

Occurring as it does in such widely separated regions of the world, it is but natural that the elfin-tree growth should have a great variety of names. Thus it is variously known as scrub, bush-forest, elfin-wood, heath-scrub, etc., etc. "Chaparral" is the name by which it is most familiarly known to us. How it came to be so called will appear later, when we take up for individual discussion the elfin-tree from whose name it was derived.

The chaparral is elfin only in its composition. In territorial extension it rivals the giant-forests. It covers almost all of the mountainous regions of the southern half of California, extends far into Old Mexico and invades to some extent Nevada and Arizona. It is in the Golden State, however, that it reaches its highest degree of perfection.

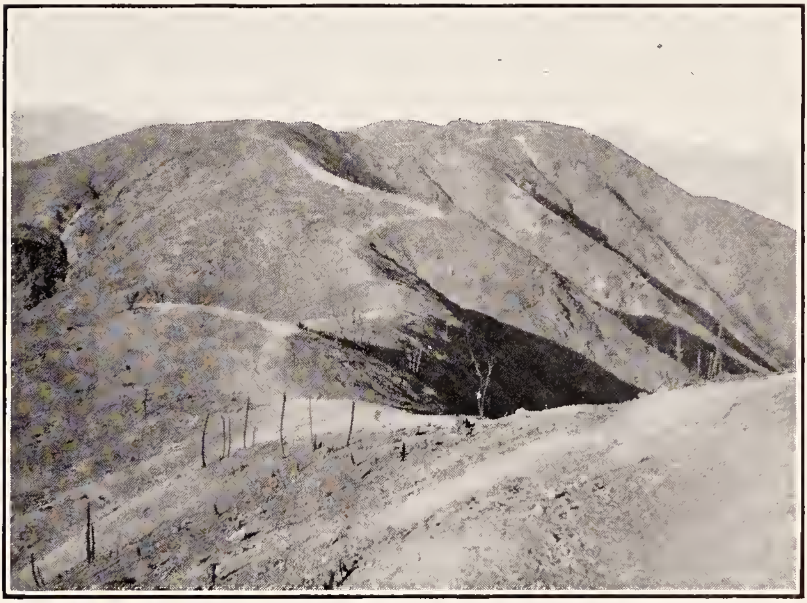
Tourists, visitors, and newcomers to the region see the foothills and mountains covered with a low, scrubby, woody growth and they immediately get the idea that Nature has treated Southern California very shabbily in the matter of forests. To them the chaparral is just so much brush cumbering the ground.

In its stead, to their way of thinking, there should be a forest of sizable trees that are fit for lumber, shingles, cross-ties, fence posts, telephone poles and fuel. When they try to invade the chaparral, and are repulsed by the dense, tough and spiny growth, they are not only confirmed in their first unfavorable opinion, but they add to it the conviction that the elfin-wood is a positive curse, and that the land would be far better off without it.

3. Growth of Young Chapparal in the San Gabriel Mountains.

But Dame Nature knew her business when she developed the chaparral. Without it the mountains of the Southwest would be stark pinnacles and naked ridges, the foothills barren, rocky slopes, and the valleys nothing but beds of cobble-stones and gravel. The growing season on the Southwest Coast is the short, cool, wet winter; the resting period is the long, hot, arid summer. Forest trees are not constituted to do their growing during three or four months of winter rains, and then rest through eight or nine months of absolute drought; the shrubs of the chaparral are. Pines, spruces, firs and cedars need some soil, or at least some deposits of rock-waste, in which to spread their root-systems; a rock-crevice is all that many of the chaparral shrubs demand.

The wealth of Southern California lies in the mountains; not in the gold and other minerals which may be hidden there, but in the water stored away from the winter rains and snows. And the mountains would be very poor reservoirs, indeed, if it were not for the blanket of elfin-tree growth which keeps the rain from running off as it falls, holds the covering of soil and rock waste in place, and prevents an enormous amount of evaporation. How defenseless the mountains are without their coat of chaparral against the elements, and how much of the rainfall they let run away which they should store up, we just now have the opportunity of seeing vividly illustrated in the Pacoima and Big Tejunga region, and in the Big Dalton and San Dimas section,

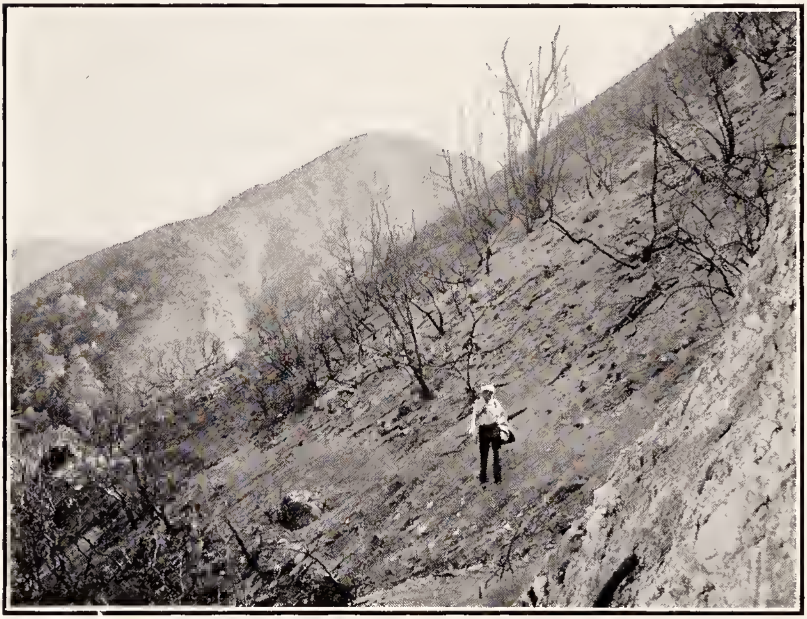


4. Fire-swept Mountains North of Glendora: Where but a Few Weeks before Stood a Heavy Growth of Chaparral.

where a few years ago fire swept away every vestige of vegetation. But of this I shall have more to say further along.

To those who have only a casual acquaintance with the chaparral, its various shrubs have little individuality. It is all brush. They may recognize the fact that the shrubs are not all alike, yet the distinctions between them are hazy. But to one who frequents the trails of the southern mountains, and who familiarizes himself with what is found along them, there is as distinctive a make-up to the Elfin-Wood as there is to the forest of giant trees. He notes as he passes that here is a manzanita, there a buckthorn, and yonder a greasewood; and he does it just as commonly and in the same matter-of-fact way as a traveler in the East notes the hickory, the elm, the maple, and the oak; or as the woodsman of the North the fir, the spruce, the cedar, and the pine. When a person puts himself resolutely to the task, learning to know the various shrubs of the chaparral is no more difficult than learning to know the trees of the forests of larger growth —except, perhaps, that it takes more time, because the number of species in the chaparral is much the greater.

Winter is the growing period of the chaparral. This statement needs some elaboration. A rainy winter and a long, absolutely dry summer are the imperative conditions for the production of elfin-forest growth. These conditions prevail wherever in the world an elfinwood exists. This winter-growing and sum-



5. Trail Entirely Covered with Soil Which Has Slid Down the Slope after a Fire.

mer-resting reverses the order of tree growth to which most of us have been accustomed. We are surprised when we first come up against it. But a little thought soon shows us that it is the only possible thing; for there is no growth without a supply of moisture. In Southern California the moisture comes only in the winter time. Then the supply is copious; but the season is short, and heat—another essential of rapid and luxuriant growth—lacking. So the growth of the chaparral shrubs is slow. The result is dwarfed stature and a general toughness and hardness of wood. Shrubs of twenty-five years or more may not have a greater diameter than two or three inches and a height of five or six feet.

The chaparral is mostly evergreen, yet there is a great change of color with the passing from the period of rest to the growing season. Throughout the summer and autumn months, the foothills and mountains are of a brown, lifeless tone; but with the first rains of winter they "grow green in a night," as it were, and literally sparkle with new life. When the rains quit in the spring—usually by March, or April at the latest—the hue of verdant green begins to fade at once. The change is not so sudden, nor so marked as that at the beginning of the growing season, but it is fully as rapid as the change from summer to autumn colors in the deciduous forests of the East.

6. Smiling Phacelias Among the Charred Skeletons of Fire-swept Chaparral.

It must not be supposed that no timber of large stature exists within the chaparral zone. Timber areas of various larger sorts are to be found here and there throughout the range, some of them really extensive enough to merit the name of forests. They have their definite places, however, and we always know where to find them. They are of two general kinds, both as to sort and as regards location. Those of the broad-leaf sort—mostly oaks, although sycamores, cottonwoods and alders often abound—are in the valleys and canyons; while at the summit of the higher ranges, and extending for some distance down the north slopes, we find pines, spruces and other needle-leaf evergreens. The wide zone between the two is the empire of the chaparral. It often has an unbroken width of a score of miles and a vertical range of 6,000 or 7,000 feet. Its lower fringe may rest at sea level; its upper edge may reach an altitude of 8,000 feet.

Nearly the whole area of the chaparral belt lies within national forests. The old Spanish and Mexican land grants—which are mostly now cut up into small holdings—often included areas of chaparral along the lower parts of the foothills. But the Dons never run the lines of their grants so as to include any of the undesirable brush that could possibly be avoided. Chaparral made poor pasture land. And, as a rule, they made haste to get rid of whatever may have fallen to their lot, by burning. Later when the homesteader was looking for desirable land it never appealed very strongly to him. So when our government at last began to establish forest reserves it found most of the chaparral still in its possession. And Uncle Sam, in the interest

7. Wild Morning Glories Hiding the Blackened Surface of a Burnt-over Slope.

of land-conservation, promptly drew the boundaries of his national forests so as to include it all.

When we first see these public "brush reserves," as they have often been derisively named, the idea of calling them "National Forests" is amusing. How by any stretch of imagination could we look upon such a shrubby growth as a forest? But our point of view gradually changes as we learn to know the chaparral better, and we see that it really is a forest—in composition, in extent and area, in the function it performs—and at last we ungrudgingly grant to it the title, and with it a hearty acknowledgment that its part in the economy of Nature is on a level with that of any timbered tract in the world. Then "National Forests," as applied to the government reserves of the region, sounds not only right and just, but also natural.

Fire protection is the one urgent need of the chaparral. It is spared the danger of the lumberman's ax, on account of its size; and is not in jeopardy of the pioneer's mattock, because of its position; but it is doubly exposed to that greatest of all forest foes, fire. It burns like a torch of fat. Its evergreen leaves not only burn as readily as do pine needles, but the denseness of the cover furnishes a continuous, unbroken sheet of fuel, in which for long distances there is no break of any sort where the flames may be brought to a stop. Then, too, the long, hot summer period dries out the twigs and desiccates the grasses, flowers and weeds, until finally the thicketed slopes are as

8. Elfin-Forest in the Santa Ynez Range.

inflammable as a match. Let a fire once get started on a thickly set chaparral slope and there is no stopping it until it reaches the ridge above. It furnishes conflagrations which light up the region for leagues around, and which make the very world seem on fire.

So great is the fire danger in the chaparral regions that, as the summer advances, the force of fire patrols must be largely increased. While the height of the dry season is on—August, September and October—fire guards are stationed in many quarters of the national forests which during the remainder of the year receive scarcely any attention at all. The forest fires in the southern reserves are caused almost entirely through the carelessness of campers. The vigilance of the rangers and fire guards and the arrest and punishment of all persons who are proved to be in any way responsible for the starting of forest fires have greatly lessened their occurrence. So great is the danger from this source, however, that in most of the national forests of California—if not in all—fire permits are issued, and it is a misdemeanor to start a fire without holding such a permit.

A burned-over chaparral slope is as desolate looking a region as a fire-swept forest of pines. It has one advantage, however: it is more apt to recover, and requires a much shorter time in doing it. In fact, its "comeback" is often so rapid as to appear only a little less than a miracle. Then, too, Nature seems to take pains to hide the fire scars, even while she is getting ready for another growth of chaparral. She calls forth a troop of phacelias or other wild flowers to occupy the ground, or festoons the charred and blackened skeletons which the fire has left with garlands of wild morning-glories.

But however much Nature may thus beautify the burned and blackened earth, she loses no time in covering it again with chaparral. Some of the new growth comes from the old roots which have successfully resisted the fire; some from the seeds that were buried deeply enough to survive the heat; and some from fresh seeds carried in by birds and small mammals. A few seeds, such as those of the clematis and mountain mahogany, are brought in by the wind. Often by three or four years the new growth is making a respectable showing, and within fifteen or twenty years the chaparral may have fully come into its own again. In thus making haste to "rechaparral" a ravished slope it is as if Nature knew there were urgent need for no delay. And she does. One season of torrential rains may sweep away from an unprotected mountain side the results of a century's growth of chaparral. If the soil and rock waste are to be held in place, there must be a new forest-covering at once.

I was profoundly impressed with this fact recently when passing over the burned district north and east of Glendora. A heavy rain had immediately followed the fire; and as a result I found the flats in the adjoining canyons covered with a deposit of fine soil, in some places to the depth of several feet, while on the ridges above bare rocks were everywhere showing on the surface. It will take a quarter of a century for the chaparral to replace the amount of soil-covering that was washed away in that region during the winter following the fire.

While the chaparral is quick to take up the work of recovering any ground lost through fires, and within a few years may completely reforest a denuded area, yet it is of slow growth as compared with forest trees of larger size. Most of the species at fifteen or twenty years of age are not more than two or three inches in diameter and six to eight feet in height. The maximum ages of the different species have not been fully determined, but it is pretty well established that most of them attain full stature at from twenty to twenty-five years of age.

In number of species the Elfin-Wood far surpasses the giant forests of the North or the hardwood forests of the East. There are about 150 different species of the chaparral. As in every forest, some species are dominant, some fairly well represented, and some of only casual occurrence. Of the dominant type of chaparral species there are about twenty; and to these belong nine-tenths of all the growth. Of secondary species there are about sixty.

The remainder, as forest-cover, may be regarded as unimportant.

In local distribution, the Elfin-Wood mimics the forests of greater stature. Each species pre-empts those areas which by position and soil are most favorable to its growth and less hospitable to other species. So it happens that we often find a solid stand of manzanita, or of ceanothus, or of greasewood, or of some other species. Again, where the conditions seem to invite all alike, we run across a mixed growth of several species. Occasionally there are stretches where the growth is sparse, and sometimes noticeably dwarfed. Some patches of the mountain side—especially higher altitudes—seem so inhospitable that only the manzanitas, those sturdy gnomes of the chaparral, pluck up courage enough to invade them.

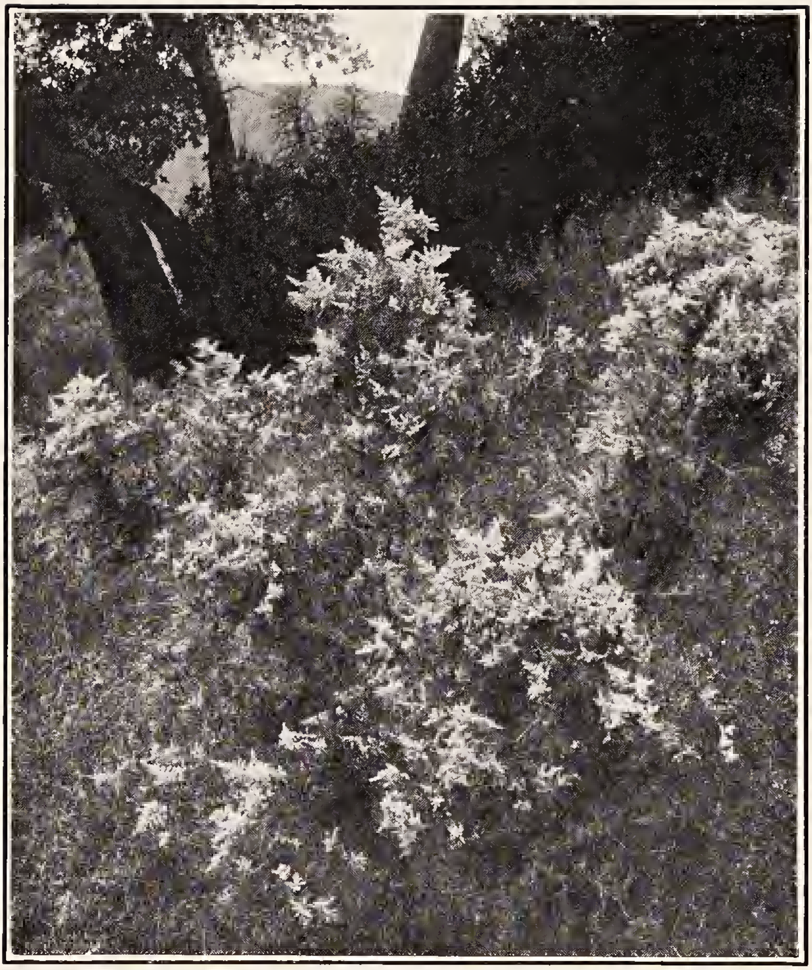
This, perhaps, is enough on the general subject of "Chaparral." In succeeding chapters I shall take up the individual "trees" which go to make up the Elfin-Forest.

II

THE ELFIN-TREES

THE "trees" of the chaparral which are most in evidence, and with which newcomers first get acquainted, are the greasewood—or chamise, as it is just as frequently called—manzanita, ceanothus, sumac, sage, and scrub-oak. There are two or more species of each, but the species of each group have such a common resemblance, and the group characteristics are so distinctive, that a person who becomes interested in their study will soon learn to know the groups, in a general way, at least, and will unconsciously recognize them as he passes by. Not many persons ever learn to distinguish between the species—of the manzanitas, for instance, of which we have some five or six; or the ceanothi, with twice that number—but it is not necessary that they should, in order to have a fairly good knowledge of the chaparral. After a person has learned to recognize the half-dozen above mentioned, he will gradually add to the list about ten or a dozen others, which, although not so plentiful, are either widely distributed, or else have some special claims to one's attention.

Greasewood *(Adenostoma fasciculatum)* (Fig. 9) is the most plentiful of all the chaparral species. It is found almost everywhere throughout the range of the Elfin-Forest, and is estimated to form about one-third of all the cover. Spanish-Californians call it "chamiso" —colloquially "chamise"; and where it forms a solid coppice, to the exclusion of other species, as it often does, they refer to it as "chamisal," using the name as a ranking term with — but distinctive from — "chaparral." Chamiso is commonly called "greasewood" by rangers, mountaineers, prospectors, and other trail frequenters. The small, almost needle-like, olive-green leaves of the greasewood make it easily recognizable, although the shrub itself may vary in shape from a slender spire, where it occurs in thickets, to a hemispherical bush, as it is found when standing alone. It is not an early bloomer, waiting until all of the *Cean-*



9. Chamise *(Adenostoma fasciculatum)* in Bloom: Often Called "Greasewood": Photo by George McLean.

othi (wild-lilacs) have made their displays; then, along about June, it whitens the mountainsides, sometimes for miles at a stretch, with its stiff, multitudinous racemes of small roses — for that is what the minute flowers really are.

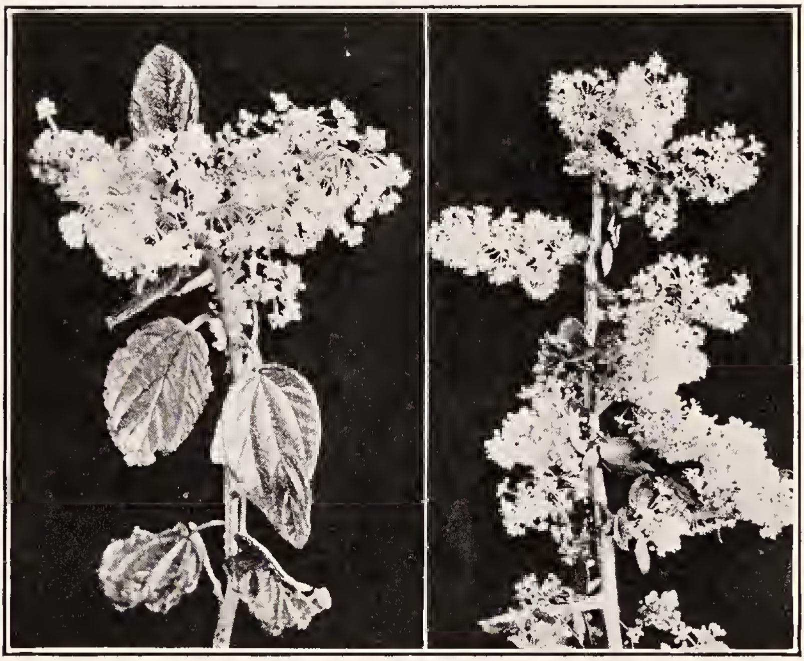
Greasewood has a wide vertical range, growing from sea level up to nearly 8,000 feet; but at its upper limit it is dwarfed to half or third its size on the foothills. The shrub is highly inflammable, for which reason it is no particular friend of the forest rangers. We may regard it as a distinct and fruitful blessing to the "Land of Little Rain," however, because it will grow in almost any place, and recovers quickly from fire devastation, its roots usually surviving fires which burn the trunk to the merest stub.

A sister of the chamise flourishes in the southern part of the Elfin-Forest. It is *Adenostoma sparsifolium* (Fig. 10), the specific name indicating one of its distinctive characteristics — thinly-leaved. It is often called "red-shank," from the color of its trunk. It keeps shedding its bark in long, thin shreds,

10. A Solid Growth of Red-shank *(Adenostoma sparsifolium)*, Through Which, Canal-like, the Highway Has Been Cut.
11. Thicket of "Wild-Lilac" *(C. divaricatus)* in Full Bloom, Light-blue to Indigo.

which gives it a rather untidy appearance. But this characteristic serves as an unfailing mark of identification. It is a much more robust shrub than its sister, the greasewood, growing to double the diameter and nearly twice the height. It is plentiful about the western slope of Mt. San Jacinto, and from there southward. The only place that I have seen it north and west of the San Gabriel Valley is in the Santa Monica Mountains, where there is a patch of unusually fine specimens near Saddle Peak. The Spanish-Mexicans call it "Yerba del Pasmo"—herb of the spasm. They have found it an efficient remedy for convulsions, snake bites, cramps, lockjaw, and inflammations.

Next after the greasewood, ceanothus, including all the different species, is probably the most plentiful of the elfin-trees—although the scrub-oaks, which will be taken up later, are close competitors for this honor. There are about a dozen species of the ceanothus in Southern California, but scarcely ever more than two or three of them are found in the same locality. Only about half of them can be said to be common—that is, are likely to be found anywhere in the chaparral belt. They resemble one another so much that the amateur who tries to identify them, and to line them up so he can call them by name, usually retires from the job in confusion and is content to fall back with the common herd where they are indiscriminately known as "wild-lilac," "mountain-lilac," and sometimes as "myrtle."



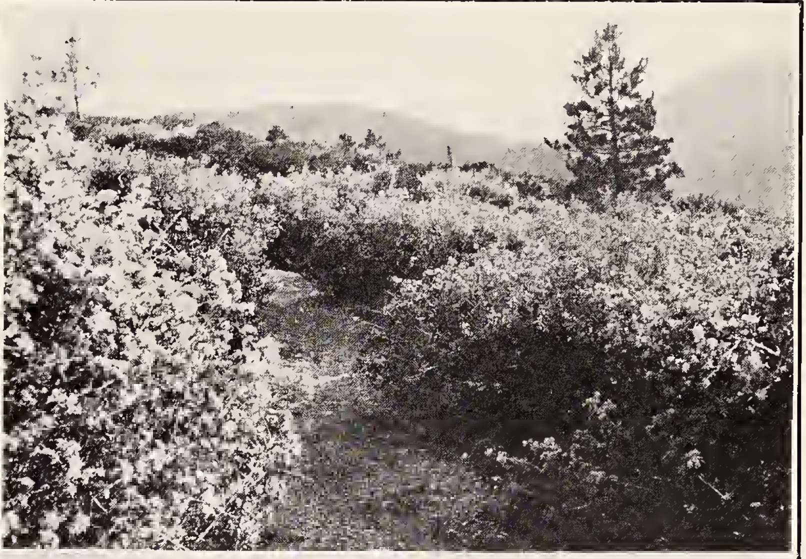
12. Another "Wild Lilac" *(C. integerrimus).*
13. "Wild-Lilac" or "Myrtle" *(Ceanothus divaricatus).*

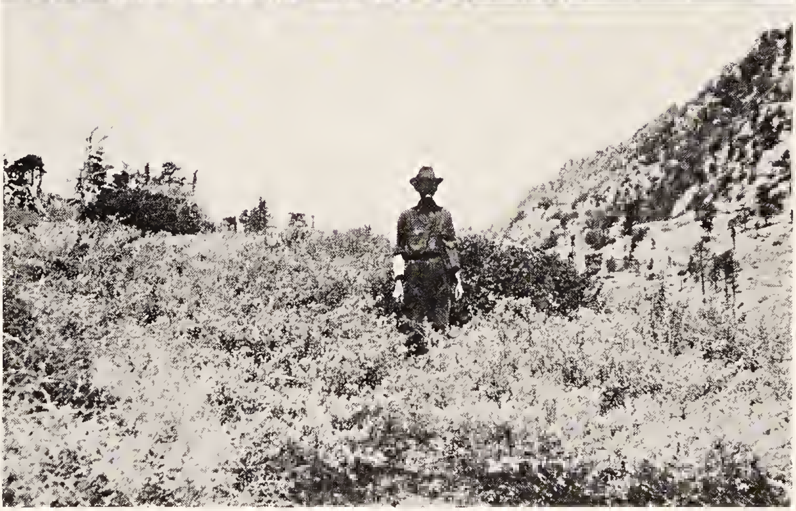
The flowers of several species of ceanothus have the property of making lather when briskly rubbed in water, and they make a very fair substitute for soap. The blooming time is from January, on warm, southern exposures, to June on the north slope of the higher ranges. Some seasons the bushes are masses of bloom. At such a time, especially where the prevailing color is white, foothills and mountains appear as if sprinkled with a light fall of snow. The slopes of the Santa Ynez Range, back of Santa Barbara, are famous for their wide spread of ceanothus. In late February and early March the mountains just back of the town are usually white for miles with its bloom. The species most plentifully represented in the display is *crassifolius* (Fig. 19).

The *Ceanothi* are members of the *Rhamnaceae,* or Buckthorn Family, and they are often spoken of as "buckthorns." Two or three of the species have practically usurped the name for their own use, however. The one most universally known as "buckthorn" is *C. cordulatus;* but *C. divaricatus* (Figs. 11, 13, 14), also, is often so called. The branchlets of both these species end in sharp, stiff thorns, and a coppice of either kind is almost impenetrable. *C. spinosus* is another spiny species, as its name would indicate—but it is neither so common, nor so widely distributed as the two species just mentioned. The prevailing color of the flowers of the *spinosus* and *divaricatus* is blue, although both vary to white. *C. integerrimus* (Fig. 12) is a blue-flowered species. It is without thorns.

14. "Wild-Lilac" in its Glory *(C. divaricatus)*.

"Buckthorn" *(C. cordulatus)* (Figs. 15 and 16) has the greatest vertical distribution, occurring from well down toward sea level to over 8,000 feet. On the foothills it mingles with other of its sister species, but at its topmost limit it has left them all far behind. At lower altitudes this shrub grows luxuriantly, and its spines are not so very numerous, nor unduly stiff and sharp; and while a copse of it there is repellent enough, yet as compared with its growth at higher altitudes it may be classed as innocuous and inoffensive. A thicket of buckthorn at 7,000 or 8,000 feet is positively aggressive in its hostility. Where the conditions are Alpine enough for snow to cover the ground to a depth of several feet during the winter months, the shrub forms a low, thick mat which is much easier to walk over than to push through. Persons traversing the snowy slopes in early spring, becoming weary with the heavy snow tramping, sometimes throw themselves down on one of the buckthorn mats, which has been bared by the sun and wind, to rest. But they soon learn to drop as gently as possible, and to lie very quietly after landing,





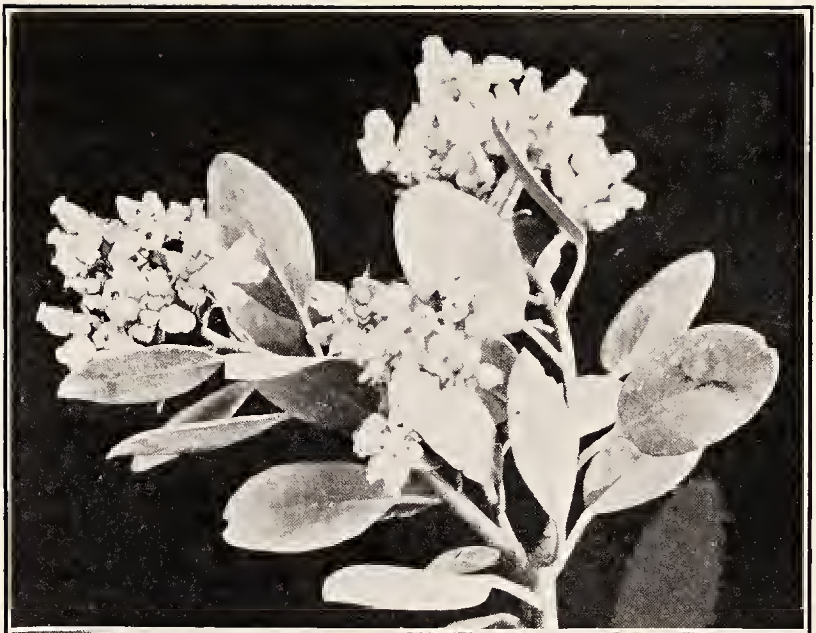
15. Buckthorn *(C. cordifolius)* at Low Altitude.

16. Buckthorn at High Altitude, Where it Becomes a Low, Impenetrable Mat.

for a liberal portion of the brushy mat is composed of sharp, thorny branchlets. Little-used trails in the high altitudes often lose themselves completely where they pass over areas covered by the buckthorn.

Chinquapin brush *(Castinopsis chrysophyllus)* forms a much more comfortable mattress than the dwarf buckthorn on which to lie. Chinquapin is sometimes called dwarf chestnut, because it closely resembles the true chestnut in its nut-burs; and, indeed, it is nearly related. It is plentiful at altitudes above 8,000 feet in our southern mountains. It forms dense thickets, or what would be thickets, if the brush had a chance to grow upright. But it is covered so deeply and so long with snow that it becomes springy mats of leaves and branches. The leaves are evergreen and of a yellowish green color. The burs are like those of the chestnut—fully as prickly and uncomfortable to handle—only smaller. They contain from three to six small nuts that are more or less angular from crowding one another.

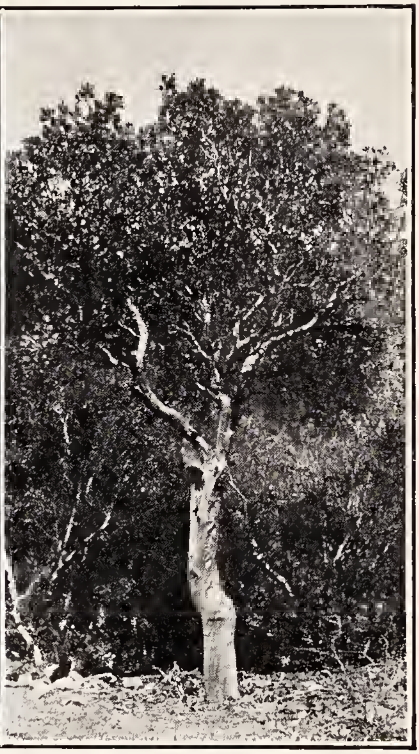
Most new-comers learn the manzanitas (Figs. 17, 18, 20) first of all the chaparral



17. Flowers and Leaves of the Manzanita.
18. On the Trail Through a Solid Thicket of Manzanita.

shrubs. This is on account of their striking and distinctive appearance. There are several species, but to the layman they are all "manzanitas," without distinction or difference. They are so different from all other shrubs, however, that there is no mistaking them for anything else. With wood almost as hard as bone, and with smooth, velvety, red-and-greenish bark, the trunks and limbs twist and turn and angle, until it is a rare find if you run across a perfectly straight section as much as two feet in length. The velvety surface of the bark with its liquid tints always appeals to me, and I often stop on the trail to run my hands over some especially enticing-looking trunk. Everything about the manzanita is striking. The flowers are dainty waxen-white urns, while the berries are usually red enough to attract attention. The berries are not as good as they look, however, being hard and not very juicy. Yet they have an acid quality which makes them useful in different ways.

The California Indians used the manzanita berries for food in former years, and probably do yet occasionally. And it is said that the early white settlers made vinegar and brandy from them. Following a tradition that the half-ripe berries are excellent for quenching thirst, I have tested the matter a number of times when caught out on the trail short of water. My testimony is that while they are



19. Still Another of the "Wild-Lilacs" *(C. crassifolius)*.
20. An Unusually Straight Specimen of the Manzanita.

thirst assuaging to some extent, and that it is worth while to keep the fact in mind, yet there are usually more palatable things to be found along the trail which will serve the purpose just as well, or even better.

In the North the ripe manzanita berries are not so hard and dry as they are southward, and in that region they are quite frequently gathered for household use. I was coming down out of the Sierra Nevada Mountains once and had stopped at Crockers, a small station some distance north and west of the Yosemite, for dinner. On the table was a glass of limpidly-clear pink jelly. I ate some of it, not knowing what fruit it was made of, and found its flavor one of the most delicious in all my jelly experience. I learned later that it was manzanita jelly. Like everything else pertaining to manzanitas, it was distinctive.

"Manzanita" is Spanish for "little apple," *manzana* being the word for apple in that language, while *ita* is the diminutive. "Bearberry" is another common name for the shrub, derived from the fact that bears seem to be very fond of the berries. But the name is neither so euphonious, nor so rich in sentiment as "manzanita," for which reasons, perhaps, its use seems to be losing ground. It is interesting to note that the generic name, Arctostaphylos, by which the manzanitas are botanically known, is Greek for bear-berry. Anyone looking up the shrub in later books on botany, may find it under the name of Uva-ursi, which also has reference to bruin.

The manzanitas have a cousin that is found somewhat sparingly in the chaparral country. This is the "Madroña" *(Arbutus menziesii).* It occurs so sparingly in the south, however, that were it not for its distinguished bearing, we should scarcely notice it at all. It really belongs to a colder clime, and thrives best where there are summer rains. From Northern California to British Columbia it is a noble tree about which travelers have written and poets have sung. But it lives, too, in the Elfin-Forest, as a dwarf, although of much taller stature than its cousins, the manzanitas. Its urn-shaped flowers, leathery leaves, and smooth red-and-greenish bark all proclaim its relationship to the latter. Yet it has never learned to distort its trunk and limbs like the manzanitas, but grows fairly straight however dwarfed it may be by heat and drought. It seems not to forget the traditions of a better life, and ever maintains its aristocratic bearing. Whenever I meet this trim fellow on the Southern Mountains, the picture of his giant brothers of the North comes to me and I see them with a thickness of four or five feet and the height of a hundred. I am always reminded, too, that it was the madroña that inspired the Poet of the Sierras to write:

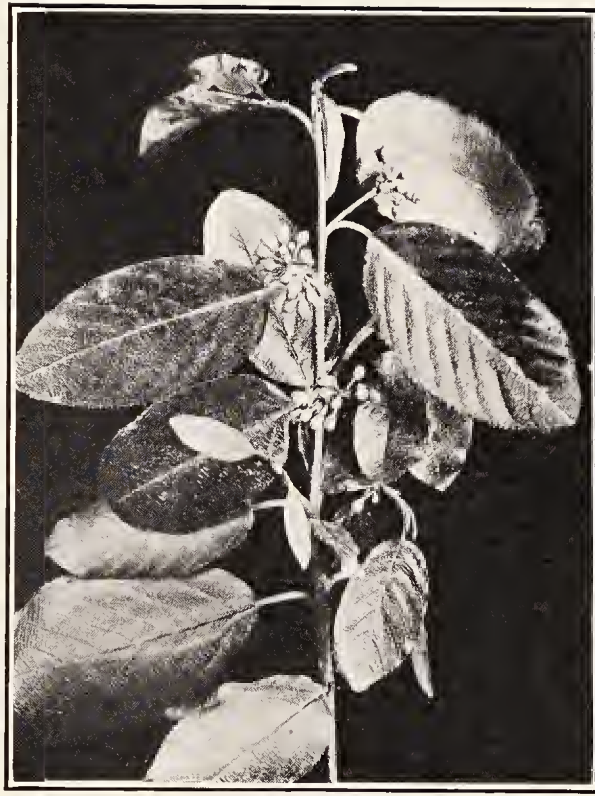
"Captain of the Western Wood,
Thou that apest Robin Hood!
Green above thy scarlet hose,
How thy velvet mantle shows!
Never tree like thee arrayed,
O thou gallant of the glade!"

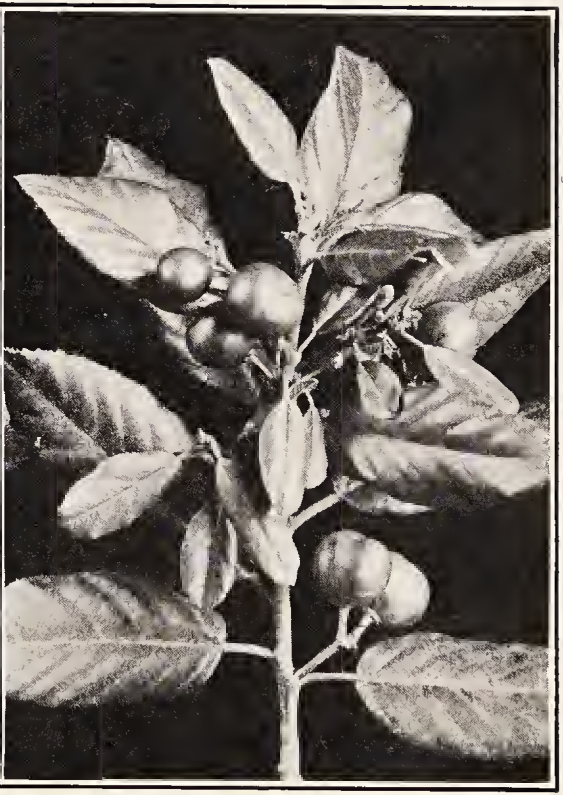
Near Los Angeles, one may find the madroña at a couple of places along the Hoegee trail in the Santa Anita region; and at other places around Mt. Wilson.

The manzanitas have still a couple of other cousins among the chaparral shrubs, but their general appearance does not proclaim the close relationship. Yet when we see them in bloom, and notice their vase- or urn-shaped flowers are very much like those of the manzanita, we are not surprised to learn that they are cousins of that shrub. One of these is *Gaultheria shallon,* commonly called "Salal," or "Wintergreen," the latter name coming from the aromatic, edible berries. Like the madroña, its true home is in the north, where it often grows into tall, dense thickets, and bears heavy crops of fruit. In the south, however, it is sadly dwarfed, seldom being more than four or five feet in height. While more or less distorted in shape, it is not so stiff, bonylike, and unyielding as the manzanita; neither has it the smooth bark and bright appearance of the latter. In the northern part of the chaparral belt it is somewhat plentiful, but towards the south it grows scarcer and scarcer until it entirely disappears. I have not noticed it south of Santa Barbara county.

The other cousin of the manzanita is *Comarostaphylos diversiloba.* I am sorry that I can mention no common name for this shrub, but I know of none. It resembles the salal mentioned above very much in general appearance, and is quite commonly taken for that shrub. But its geographical range is different. It begins along the coast about where the salal runs out, and continues on southward. It is also found on Catalina Island, where it is almost tree-like in stature, and where it blooms so profusely as to be a very striking object when in flower.

"A prophet is not without honor, save in his own country." This saying of the ages is as true of things as of men. The Elfin-Forest furnishes several examples, one of the more notable of which is the "Cascara-Sagrada"—Sacred Bark—of the Mission Fathers (Figs. 21 and 22). When the Padres came into the country they found the Indians using the bark of the shrub as a corrective to the astringent effects of an acorn diet, and as a specific for rheumatism and other disorders. Appropriating it to their own use, the Missionaries found the laxative qualities of the remedy to be of such a high order that they called it "Sacred Bark." They gave it to the world at large, where it has taken a place in the front rank of





21. Cascara-Sagrada *(Rhamnus californica)* in Bloom.
22. Cascara-Sagrada in Fruit: Each Berry Contains two Seeds of the General Shape of Coffee-grains.

all known laxatives. When the botanist came along, he classed the shrub with the buckthorns and christened it *Rhamnus californica.* Well-known as are its qualities to the medical profession, and great as is its reputation in the pharmaceutical world, to by far the greater number of those persons who traverse the southern mountain trails Cascara Sagrada is an unknown and unrecognized shrub. And to many of us who do see it and know what it is, it is "California-Coffee" or "Pigeon Berry"—the former name coming from a resemblance of its seeds to coffee grains, and the latter from the fondness which the band-tailed pigeons exhibit for its berries. The berries are charged with being responsible for the bitter taste of the flesh of these wild pigeons. And they are without doubt partly guilty, but acorns probably play a much larger part in the matter. Although the seeds bear a remarkable resemblance to coffee grains—so much so that some enthusiastic persons once thought they had found a substitute for coffee—yet they have none of the coffee qualities, and do not in any degree make a palatable drink.

In the chaparral belt Cascara Sagrada is shrub-like in size and form, but in Northern California and Oregon it is of tree-stature, and it is in that region that the bark is collected in large quantities to be shipped to all parts of the world.

III

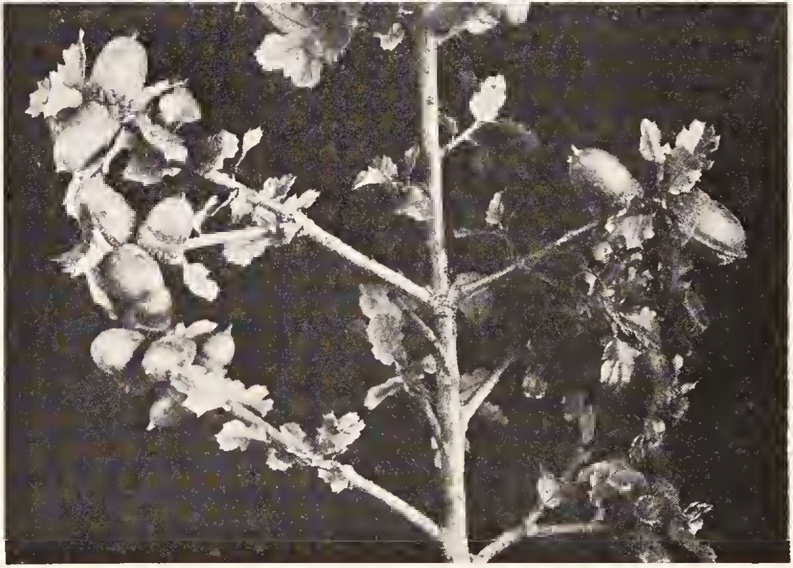
SCRUB-OAKS AND SUMACS

IF WE were critical about the order in which we take up the shrubs of the chaparral we should begin with the scrub-oaks, for it is from them that we get the name. There is an erroneous opinion with some persons that "chaparral" comes from "chaps," those ornate leg protectors which form such a distinctive feature of Wild West movies, and which are also worn by genuine cowboys in parts of our country where they are needed. But of course most persons know it is the other way about. Chaparral comes from chaparro, the Spanish name for live oak; and from chaparral, or perhaps direct from chaparro, comes chaps—those hide appendages which the vaqueros wear to protect their legs from the hostile scrub-oaks.

Scrub-oaks of the chaparral are either true live-oaks, or those which hold their leaves until the new foliage begins to appear. To the ordinary observer they are all evergreen. For this reason, one does not at first pick them out from the common mass of the chaparral. A newcomer is almost never able to single them out; even many old residents do not distinguish them from the other shrubs with which they mingle. A newcomer may be pardoned for not readily recognizing them, for they do not correspond to his lifelong idea of what oaks should be. Many persons have not yet learned that when they come to California, they must reconstruct about all the opinions they have ever formed concerning how things should grow, and that they must reorganize their entire stock of nature-knowledge.

Well, about those scrub-oaks. If you are a recent-comer to the region, you are still embarrassingly ignorant of what the chaparral is composed, when one day you are out on the trail and something hits you a sharp dab in the face. You stop to investigate, and you find that the sharp thing is an acorn! And growing on one of the bushes, too! You are surprised, for to you acorns mean oaks, and oaks are trees. Yet here are full-grown acorns an inch long, yes, two inches sometimes, growing on a bush. When you investigate, you find that the bushes are undeniably oaks, and you are happy in the acquisition of one more fact to add to your stock of chaparral knowledge. But later on you are in dismay, when you learn that there are several of these scrub-oaks, and that you are not able to tell them apart. If you are of a happy-go-lucky sort of disposition, you will just class them all as scrub-oaks and let them go at that. But if you are painfully discriminative, the worry of uncertainty will probably be with you for many a day, for these various scrub-oaks are widely distributed in the Elfin-Forest, and you will be continually running across them. They form about 15 per cent of the cover.

If we were to single out any particular one of the oaks which are found in the chaparral zone to be called the scrub-oak, it would be *Quercus dumosa* (Figs. 23 and 24), as that is not only the one which is most widely distributed, and most plentiful wherever it is found, but is also the one which is most frequently shrub-like in form and appearance. The



23. Scrub-Oak *(Quercus dumosa)*: The "Chaparro" of the Spanish, from Which Comes the Name of "Chaparral."

24. Leaves and Acorns of the Scrub-Oak.

dumosa varies a great deal in size, and also in shape of leaf and acorn—in fact, so much so that the botanists have tried to make several species out of it, but not with very much success. This oak is a worthy subject of the kingdom of the chaparral, for its range is strictly confined to the limits of the Elfin-Forest. It is not a live-oak, although the old leaves persist until the new ones begin to appear. For this reason many persons, without investigating closely, are led to think of it as an evergreen.

The *Quercus dumosa* is often exceedingly dwarfed and shrub-like—frequently not more than four or five feet in height. Its shrubby form and small, rounded leaves—so utterly unlike the conventional oak leaf—combine to make a disguise that succeeds in "getting by" the great majority of persons. It has one undisguisable feature, however, the acorn. Time and time again, when on the trail in the late winter or spring, I have been asked:

"What bush is this?" the questioner pointing, or perhaps even having hold of a specimen of *Quercus dumosa.* And in nearly all instances I have had to hunt up an acorn-cup still fast to the shrub, in order to back up my assertion that it was an oak. I am willing to admit—from personal experience long ago—that it is a novel sensation for one who all his life long has walked underneath the oak trees to come here and tramp along a trail bordered with a forest of oaks no taller than his head!

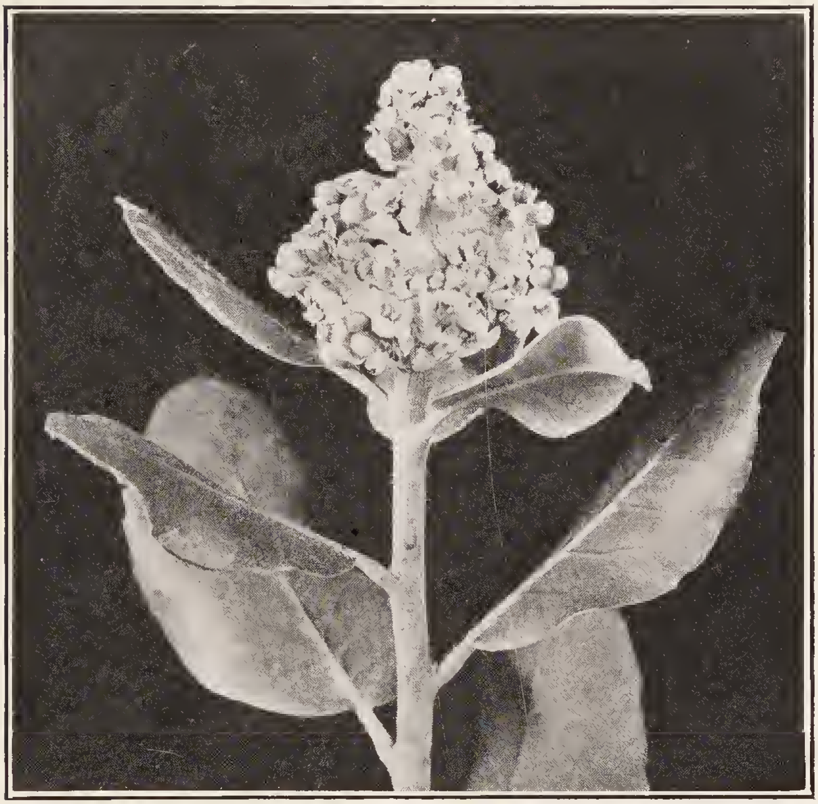
It makes no difference how low in stature the *Quercus dumosa* may be, in good "acorn seasons" it bears a wonderfully generous crop. One season near Saddle Peak in the Santa Monica Mountains, where there is a somewhat extensive area of an almost solid stand of this scrub-oak, I made a rough estimate of the acorn yield and found it to be fully ten tons to the acre! Is it any wonder that *Quercus dumosa's* progeny covers many square leagues in the land of the Elfin-Forest?

The low, dense thickets in which this scrub-oak so frequently occurs are about as nearly impenetrable to man or beast as brush of any kind ordinarily becomes. The wood is tough, the trunks and branches crooked, with abrupt, sharp angles, and the twigs, although small, are stiff and almost spiny-like. No wonder the vaqueros had to keep their legs incased in a hide armor, and that they gave the leg protectors a name derived from the hostile scrub-oak —the cordially hated chaparro!

Although so thoroughly hated by the cattle men, *Quercus dumosa* is one of the most useful and beneficent of the Elfin-Forest's household. Its roots search out every rock crevice and strike as deeply into the earth as the formation will allow, thus not only holding the soil in place, but hiding its own life away from the fires which so often sweep over the face of the land. Its branches may be consumed and its trunk burned down to the merest stub, yet the roots immediately send up a new crop of sprouts, and within two or three years have furnished the land with a fresh forest cover. Then, too, no shrub of all the chaparral makes a greater yearly foliage contribution to the leaf mold that goes into the making of the soil. So, altogether, we may rank the scrub-oak as one of the most useful and desirable of all the elfin-trees.

Two or three of the true live-oaks, which under ordinarily favorable conditions are trees of fair size, are not infrequently found of elfin-growth in situations where living conditions are hard. But none of them makes any great addition to the Elfin-Forest cover. One of these is *Quercus chrysolepsis,* commonly called "canyon live-oak." This sometimes forms dense thickets of chaparral, although under favorable conditions it may grow to the height of forty or fifty feet, with a thickness of eighteen or twenty inches. As we might infer from its common name, it grows to its larger stature in the cañons. It seems to be especially fond of narrow cañons, where it not only occupies the floor, but often pre-empts the steep sides as well. Where it grows on steep slopes and at higher altitudes, it is usually dwarfed. Its acorns are unusually large, with shallow cups. The cups are covered with a light yellowish wool, from which the oak is often called "golden-cup oak."

A person coming from the East must not only reconstruct his old ideas concerning oaks, but he must do likewise with his notions about the sumacs. Indeed, our sumacs are apt to give him a good hard jolt. There are some half-dozen of these interesting shrubs in Southern California, all belonging to the genus Rhus, and, therefore, all first cousins of the



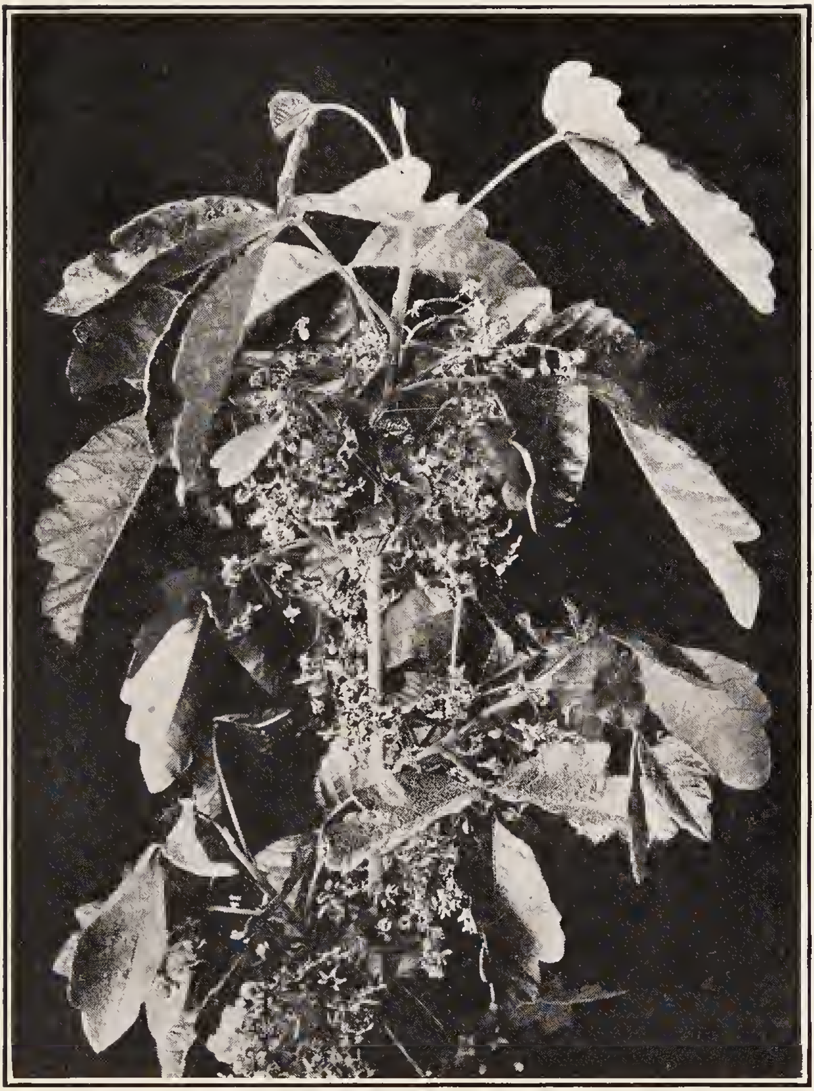
25. Wild-Mahogany *(Rhus integrifolia)*: A California Sumac: Often Called "Lemonade-Berry."

eastern sumacs. The common eastern shrub has compound leaves of many leaflets, is a glorious mass of color in the fall, and in winter stands a stark skeleton stripped of its brilliant robe, though still bearing aloft its compact bunches of dark-red berries. Its wood is a satin-yellow—dear to my memory from burning spiles for tapping sugar-maples. The California sumacs are as different as can be, in appearance. They are evergreen—most of them—with rather large, single leaves, while the wood is white with a dark center. Nearly all of the species are noticeable for their profusion of flowers. One of them is called wild-mahogany, on account of its dark red heartwood. This one is *Rhus integrifolia* (Fig. 25), the specific name coming from the large, leathery leaves. This species is very plentiful near the coast. It blooms very early in the spring and has beautiful bunches of pink and white flowers. *R. ovata* is a sister species, very much resembling the last, but with smaller leaves, and somewhat less striking flowers. It grows inland and blooms later in the spring. More plentiful than either of these two is *R. laurina* (Fig. 26), with smaller white flowers which come along in June and July. The leaves are smaller, and in many ways the shrub is less attractive than either of the two other species. The shrub, however, is one of the most valuable as a forest cover of all the elfin-trees. It is lib-

26. Another of the Sumacs *(Rhus laurina)*: One of the Most Valuable as Forest-Cover of all the Chaparral Shrubs.

erally endowed with foliage, and therefore furnishes much shade to the ground and very much lessens evaporation. It also has a strong root system and is not surpassed by any chaparral shrub in its fire-resisting qualities—even excelling the scrub-oak in this respect. For which reason its seed is gathered more than that of any other shrub for reforesting purposes. It is also an abundant producer of seed.

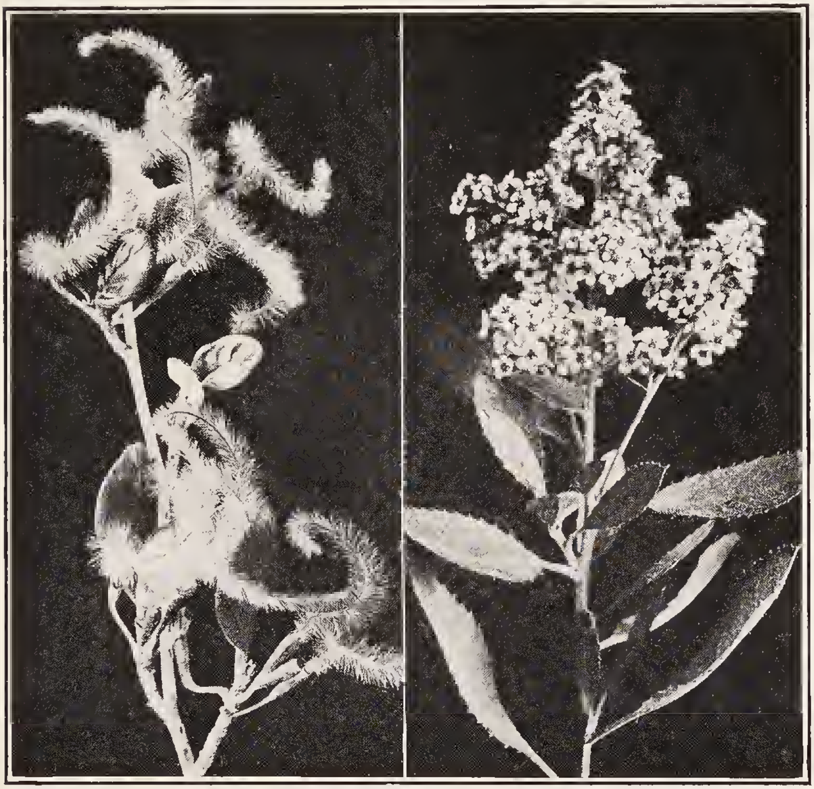
The first two of these California sumacs are noteworthy for their berries, which are borne in rather loose bunches. The berries are of a viscid and acid character, and ripen in late summer or early fall. On account of their acidity, Indians and Mexicans have long used them for making a lemonade-like drink. When out on the trail I have used them for that purpose myself, but have not found the drink very palatable without sugar. When sweetened, however, it is quite drinkable. Then, too, I must admit that when the water in the canteen has grown warm and stale, the juice of these berries certainly increases its thirst-assuaging qualities. It is not surprising, is it, that California sumacs are often called "lemonade-berries"?



27. Poison-Oak *(Rhus diversiloba)*: In Flower.

There are some other chaparral shrubs—*Cercocarpus* (Fig. 28), of two species in the south—which also go under the name of "mahogany," or "mountain-mahogany." While they are widely distributed, and in many places plentiful, they are not particularly noticeable, except when covered with seeds, each of which is provided with a feathery, spirally-inclined plume. The wood is hard, heavy, and dark-colored. In dry seasons when the forage runs short, cattle browse on the leaves and tender twigs of these mountain-mahoganies. These shrubs are not sumacs, but belong to the Rose Family, and they are mentioned here only because of the confusion which often arises from applying the same common name to entirely different classes of shrubs.

There is another one of the Sumac Family which everybody who frequents the foothills and mountains of the chaparral country should know. This is the poison oak *(Rhus diversiloba)* (Fig. 27), which is a near relative of the poison-ivy of the eastern woods. In the moister cañons it bears quite a striking resemblance to its eastern cousin, climbing by aerial rootlets; but on the dry foothills it contents itself by assuming a slender, bush-like form. Its foliage is deciduous, although the



28. "Mountain-Mahogany" *(Cercocarpus betulaefolius)*: In Seed.
29. "Toyon" or "California-Holly" *(Heteromeles arbutaefolia)*: In Flower.

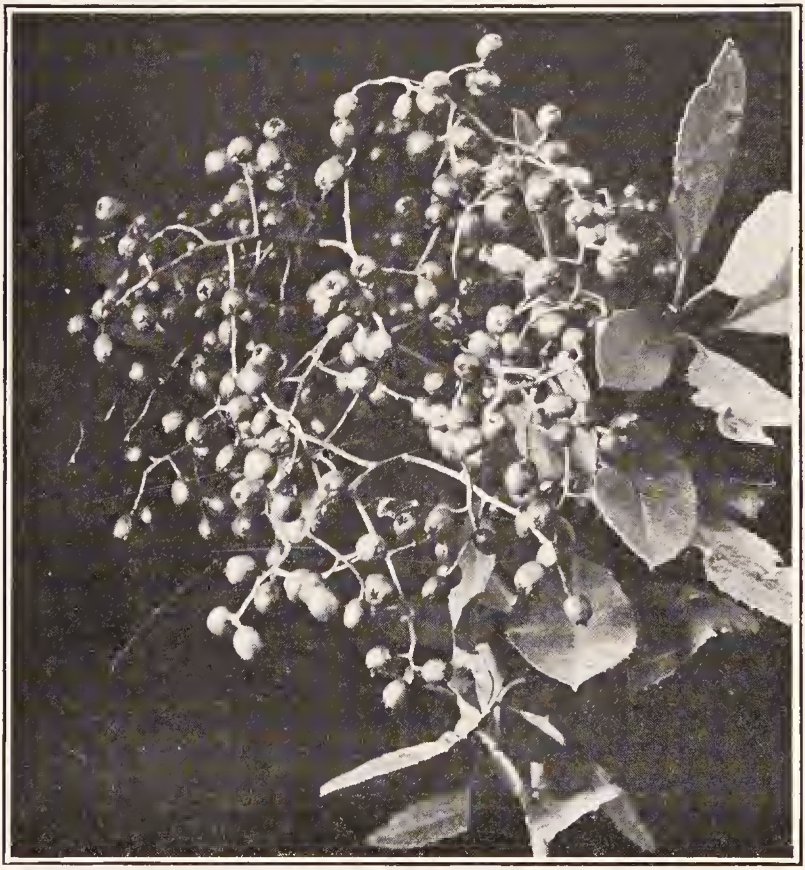
old leaves often hang on until the new ones begin to appear. It bears an abundance of greenish-white flowers, which usually come out with the leaves, or a little in advance. In the springtime it has an abundance of light-green foliage, and where it mingles with other shrubs is not particularly noticeable; but during the late summer and fall, wherever it may stand, it challenges the attention of every passer-by with its scarlet-tinted leaves. At that time of the year, everyone who frequents the trails knows it, for it is the one shrub of the chaparral which puts on brilliant colors. It is the one shrub, too, which on account of its poisonous qualities, needs to be shunned. It seems to be equally poisonous at all times of the year, although not equally so to all persons. Some persons seem to be perfectly immune to its baneful effects, while others are so susceptible as to be affected by the breeze which has passed over a thicket of the shrub. A person once poisoned is ever after doubly liable to be affected.

Poison-oak is widely distributed in the Elfin-Forest, although it very seldom forms a cover of any considerable extent by itself. Animals eat the leaves and tender twigs without any apparent ill effects, and I have noticed that horses browsing along the trail exhibit a fondness for the foliage and unerringly pick it out from a dozen or more mingled sorts.

There is no true holly among the shrubs of the Elfin-Forest, although the newcomer is always quite sure he has found some the very first time he hits the Chaparral Trail. If the time be along in September, he is apt to be surprised at the size of the berries which his newfound "holly" bush bears. Of course, it is not a holly at all. It is the mountain cherry *(Prunus ilicifolia)* (Fig. 32). But its leaves are a good imitation of those of the genuine holly, and it is commonly called holly-leaved cherry. Among the Spanish Californians it is known as "Islay." The large cherry-like drupe which it bears is mostly pit, but the exceedingly thin layer of flesh which lies between the pit and the skin has a very agreeable flavor. Indeed, this flavor has something so alluring about it that although a person never gets enough of the flesh at a time to know he is eating anything, he nevertheless keeps right on trying to. The fruit is a favorite of squirrels and other rodents.

The leaves of some of the oaks are also very holly-like, but none furnishes so perfect an imitation of the real thing as those of the islay.

We must again excuse the "tenderfoot" when he once more discovers holly—"sure this



30. Toyon in Seed: The Bright-red "Christmas-Berries."

time." Isn't it December? And are not the berries of just the right shade of red? To be sure the leaves are much larger than the holly's should be, and are leathery, instead of being stiff and armed with sharp teeth around the edges. But why stop at such trifles? The Californian doesn't. With shameless assurance he calls it holly—or, if he has any qualms of conscience whatever about the matter, California-holly, or Christmas-berry (Figs. 29 and 30). But the botanist shies at anything that is not scientific and accurate. He says this California upstart for Christmas honors is no holly at all, that its name is *Heteromeles arbutifolia,* and that it belongs to the Rose Family; while true holly has a family of its own. But "what's in a name"? For myself, I like the Spanish name of "Toyon"—spelled *tollen* in Spanish and Mexican, but pronounced as already given. This is distinctive and has a pleasant sound.

But let us get back to the shrub itself. Under favorable circumstances, it is a prolific bearer, and tons of its berries are taken to the markets of the larger cities during the week preceding

Christmas. One of the noticeable sights along the streets of Los Angeles at this time is that of the stands piled high with branches of this bright holiday berry. The shrub is very desirable as forest-cover, as it grows to a good size, casts a deep shade, and is not very inflammable. It is not as plentiful, however, as so desirable a shrub should be.

Those of us who were once boys in the Mississippi Valley or farther eastward, cherish among other memories our first experience with chokecherries. Perhaps it was a fun-loving elder brother, or a joking comrade who had already been initiated, who first tempted us with a heavy-laden branch of the black, luscious-looking berries. With what eager hands and lips we fell upon them! And how luscious they really seemed—for about a minute! And then something went wrong with our salivary glands, our mouths puckered up, our throats closed in, and we were seized with a panic of fear, while our comrades were convulsed with heartless glee. And do you remember, too, that as soon as the first attack was over the alluring flavor of the cherries was such, that, despite their puckery quality, we returned enthusiastically to the attack? And how we kept at it until we literally acquired the "chokecherry habit"?

Well, it was many years after the chokecherry days of my boyhood that I went deer hunting among the San Rafael Mountains of Santa Barbara county, a range which almost in its entirety is covered with chaparral. We were swinging briskly along the trail one day, where the way had been cut tunnel-like through dense thickets of ceanothus and manzanita, when suddenly we came out onto a little flat covered with small, spire-shaped trees some five or six feet tall, whose slender twigs were bending under loads of red-black cherries.

"Chokecherries!" I cried, and swung from my horse, thus bringing our pack-train to a halt, to the utter disgust of my companion, who never looked for anything but deer when out deer-hunting, and who of course wanted to see nothing else now.

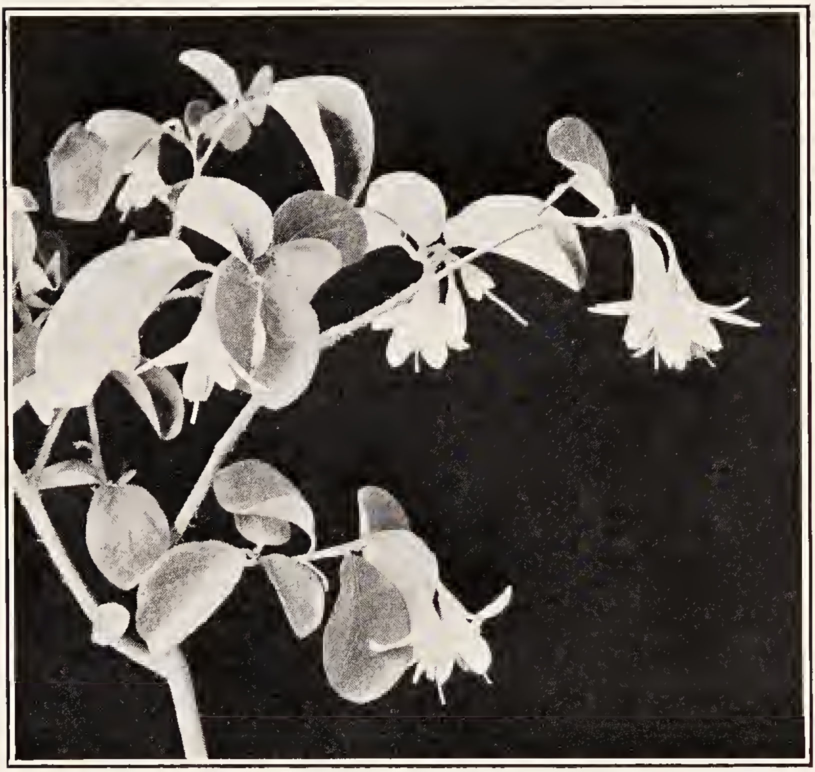
And they were chokecherries, although I had never before seen them growing on such diminutive specimens of trees—I can't call them

31. Western-Chokecherry *(Padus demissa)*: In Bloom.

32. Islay *(Prunus ilicifolia)*: Often Called "Holly-Leaved Cherry."

shrubs or bushes, for, tiny as they were, they still had the shape and bearing of real forest trees. I have since found them in many places in the Elfin-Forest, always of the same size and shape as those of my first experience, and always on some flat or gentle northern slope. Of course this California chokecherry is of a different species from that which I knew in the Mississippi Valley—according to botanists—but my palate fails to detect any difference in the flavor of the fruit which the two bear. They are of a like alluringly seductive taste, and endowed with an equally high degree of puckeriness.

Anyone who travels the mountain trails of California in May or June will find a shrub in bloom with inch-long, creamy-white flowers. In the Sierra Nevada Mountains and throughout the north the flowers may be somewhat larger than this, and in the extreme south a little smaller. In the Elfin-Forest the shrub is small, as is befitting in a community of dwarfs, but northward it grows to larger stature. But its appearance is the same, whether it grows to ten feet in the Sierra, or only four or five in the chaparral country. It has smooth, pale-gray stems and smooth, shiny, ovate leaves; and its branching habit is like that of a tree. In fact, the shrub always strikes me as a miniature tree. When a person from the East first finds the shrub in bloom, he thinks he has discovered his old friend the garden syringa. And no wonder, for could any other flower have that same delightful fragrance? The likeness of



33. Wild-Syringa *(Philadelphus microphyllus)*: The State-Flower of Idaho.

form and color, too, is enough to deceive. It is not the old garden favorite, however, but the wild-syringa of the Pacific Coast—*Philadel-*

phus microphyllus where it is found in the Elfin-Forest and *Philadelphus californica* in its northern home (Fig. 33). Although it bears the name of the Golden State, it is the State Flower of Idaho.

IV

YERBA-SANTA AND YUCCA

YOU do not travel the chaparral trails very long, no matter how new you may be to the region, before you take note of a shrub with rather long, tapering leaves which are dark green and often shiny above, and soft and almost white with woolly down underneath. "Yerba-Santa"—saintly plant—the Spanish called the shrub, because of its curative properties, and the name has become permanently fixed. Its botanical name is *Eriodictyon californicum* (Figs. 34 and 35). There are two or three sister species, all having a resemblance to one another in the shape of the leaves, but differing much in their woolliness. The flowers of the species found on the foothills and lower slopes of the mountains are usually pale lilac or white. Higher up on the mountains there is a species *(E. parryi)* (Fig. 36), with lavender-purple flowers. This is a more slender shrub than those of the lower altitudes. The flowers of all the different species have a faint, but rather pleasant fragrance.

On the foothills, and running well up on to the mountains, along the borders of the Mojave Desert west of Cajon Pass, the species *Eriodictyon trichocalyx* is very plentiful, in places solidly covering large areas. It is a low shrub with white flowers, which often are so abundant as to hide the foliage. The yerba-santa's

34. A Mass of Yerba-Santa in Bloom: Light-Lavender Flowers.

medicinal value was not discovered by the Padres, but they learned of its curative properties from the Indians, who had long used it for all sorts of disorders. The Catholic Fathers made more discriminative use of it, however, than had the natives, finding it espe-

35. Leaves and Flowers of the Yerba-Santa (*Eriodictyon crassifolium*).
36. Another of the Yerba-Santas (*E. parryi*).

cially efficient in the treatment of colds and other respiratory troubles. At present there seems to be some market for the leaves, which are gathered and dried by the Indians.

The *Eriodictyons (yerba-santas)* are the *only shrubs of the Waterleaf Family* native to Southern California—although there are many herbs. The *scorpioid* scheme of inflorescence belonging to this family should be a good distinguishing mark for anyone trying to master the yerba-santas.

All of the yerba-santas are generous bloomers. During May and June the bushes are usually crowned with loose bunches of flowers which—as already indicated—vary in the different species from white or light lavender to purple. A single spray of the flowers is not at all effective, and even a bunch of them is scarcely attractive. So for a long time we may pass them by with scant or no attention whatever, and as having no charms worthy of our esteem. But some time in our trail-wanderings we come upon a hillside over which, by strength of numbers, they cast a lavender or purple hue, the like of which we never before have seen, and which henceforth goes with us as a bright and pleasant memory.

Yerba-santa leaves are quite generally recommended by rangers and other frequenters of the mountains as a very satisfactory thirst-assuager—when your canteen has run dry and you are miles away from any spring. From using them for this purpose, I have acquired a sort of "yerba-santa habit," and often find myself picking the leaves and chewing them when thirst doesn't enter into the case. As a matter of fact, I have always had a suspicion that the relief from thirst which the leaves seem to afford is really only the comfortable feeling one experiences as a bitter taste in the mouth gradually subsides.

And now the yuccas, those bristling hemispheres of hostile bayonets and stately spires of multitudinous white bloom! Those hedgehog plants of the chaparral! Those giant candles that stand like beacons on the rocky ridges, and which seem as if designed to light the way along the mountain trails! They need no introduction to you when you enter the land of the Elfin-Forest. They will thrust their attention upon you—and by way of punctuation, the needle points of their leaves into your legs and the various other parts of your anatomy that are handy and reachable. Cloth is no protection against them, and leather only a partial armament.

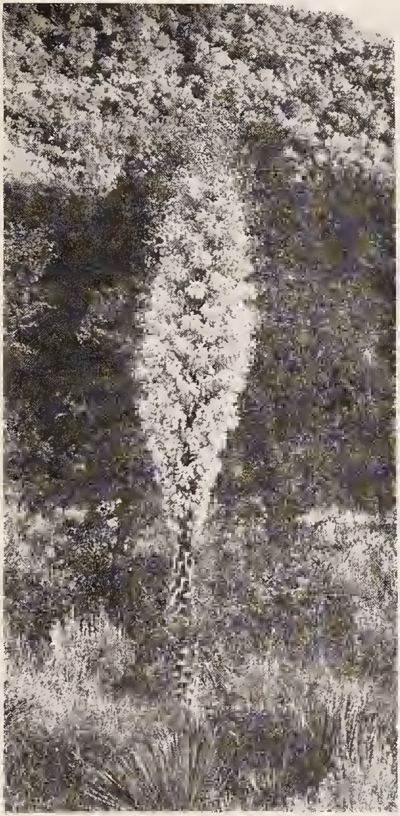
Repellent and inhospitable as the yucca looks, the Indians nevertheless find it one of the most useful of all the chaparral plants in ministering to their wants. In the springtime the lush, tender flower shoots serve them as a sort of vegetable oyster. Although at that time it is one of their main staples of life, they likewise consider it the most toothsome of all tidbits. Later in the season they make from the seed-pods a sort of flour, which is to them another family staple. From the dagger-like leaves, by a process of pounding and shredding, they get a fiber of finer sort out of which they weave linings for their coarser fabrics. So, altogether, the yucca is a good friend of the Indian.

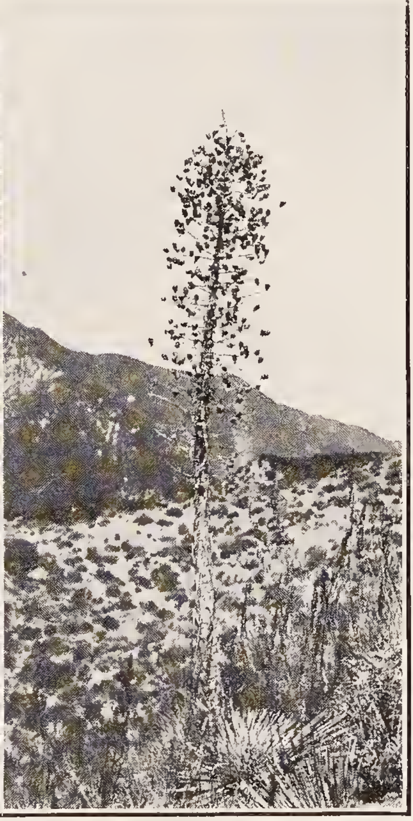
That the yucca fiber is of an excellent quality has long been known, and several attempts have been made to collect the leaves and produce the fiber in commercial quantities. It has been found, however, although the mountains seem covered with yuccas, that the expense of collecting the leaves is so great the industry cannot successfully compete with those of sisal and like fibers where the leaves come from plants raised on plantations.

The common yucca of our chaparral *(Yucca whipplei)* (Figs. 37 and 38), is generally called Spanish bayonet or Spanish dagger, although "Our Lord's Candle" and "wild-date" are other names which one occasionally hears. These names may be respectively traced to striking characteristics furnished by the leaf, by the flower, and by the seed-pod.

A chaparral plant which you sometimes find as a shrub, and sometimes as a vine, is the wild honeysuckle. And, as if to add to your confusion, it sometimes has light-pink flowers, while again they may be light-yellow. Several times I have had these apparently variant habits of the wild honeysuckle "put up" to me by observing companions on the trail. The confusion is partly due to there being several species, one of which is pink-flowered, and at least two others that are light-yellow.

The pink-flowered honeysuckle *(Lonicera hispidula)* (Fig. 39), is most common in the near coast ranges from the Santa Monica Mountains northward. In the cañons and on moist slopes it is usually a vine—often with a





37. Spanish-Bayonet *(Yucca whipplei)*: Photo by H. F. Van Winkle.
38. Spanish-Bayonet in Seed.

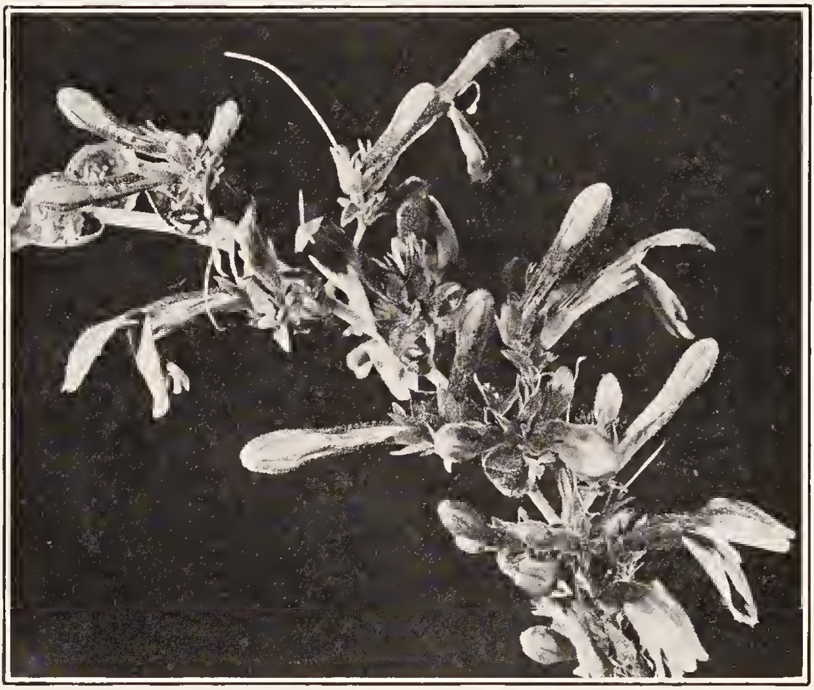
stout trunk—running up the oaks and other trees and spreading out among the branches; but out on the foothills it may be shrub-like, supporting itself against more sturdy companions of other sorts. Its pale-pink flowers have a rather washed-out appearance, and a person who is but a casual observer is apt to pass by

39. Wild-Honeysuckle *(Lonicera hispidula)*: Light-pink Flowers.

without noticing them. But in the late fall the bright red berries which have taken the place of the flowers, fairly blaze their way into the eye of every passer-by.

One of the yellow-flowered honeysuckles *(L. subspicita)* is almost everywhere throughout the chaparral in Los Angeles county and southward. It is most commonly a vine-like shrub, mingling with other shrubs for support, but is occasionally shrubby enough to stand by itself. Its berries are a deep orange,bordering on red. All of the wild honeysuckles are fragrant in some degree, the pink-flowered ones the most so.

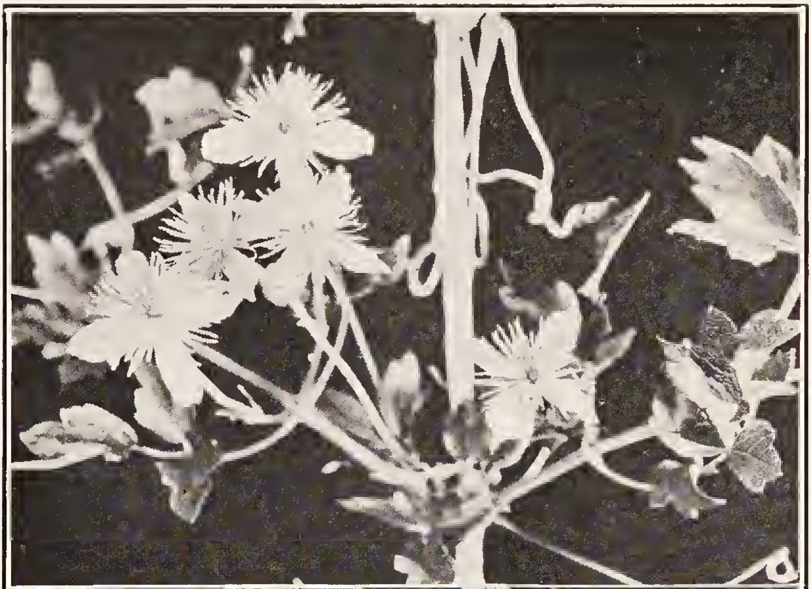
The climbing pentstemon *(Pentstemon cordifolius)* (Fig. 40), is a vine-like shrub of the chaparral which is often called scarlet-honeysuckle, for which reason many persons think it is a honeysuckle. But it is a true pentstemon. One sometimes hears the name of "honeysuckle-pentstemon" applied to it—which isn't a bad name at all, and is distinctive. While it is quite plentiful throughout the Coast Ranges of the Elfin-Forest, it is almost never found alone. It is really in no sense a vine, yet on account of its long, slender stems it must depend upon stronger, sturdier shrubs for support. So we find it interlacing the tops of ceanothus, sumac, manzanita and other shrubs,

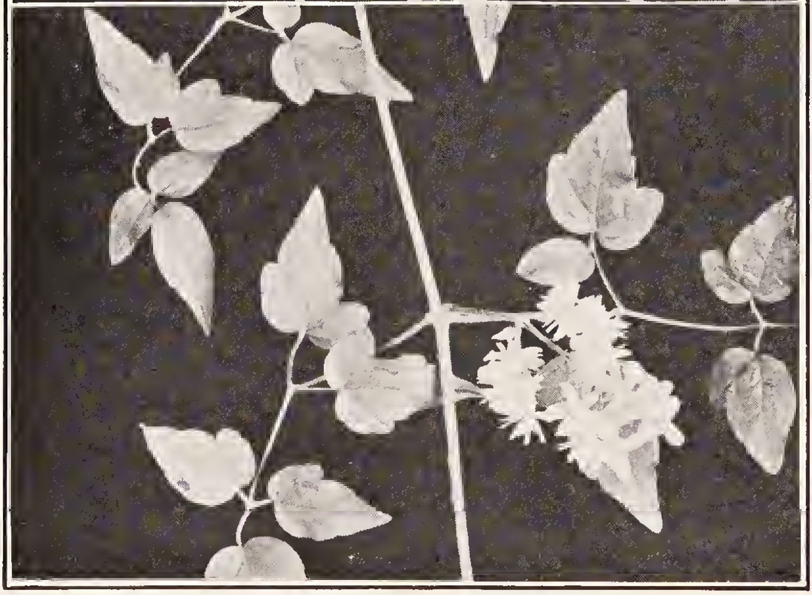


40. Climbing-Pentstemon *(Pentstemon cordifolius)*: Often Called "Honeysuckle-Pentstemon."

and on the outside of the foliage of its host dropping the ends of its branches toward the ground in a gentle, but decided curve. In midsummer these curving branches become attractive arcs of beautiful crimson flowers set among beautiful heart-shaped leaves—the specific name comes from the heart-shaped leaves. I know not whether the climbing-pentstemon is an unwelcome and uninvited guest of its comrade-shrub upon which it thus imposes itself; but if so, it redeems its reprehensible action in some measure at least, and "pays for its keep" as it were, by furnishing striking and artistic decorations.

About the wild clematis *(Clematis lasiantha)* (Fig. 41), there is no question as to vine or shrub; it is a vine that runs at will over its comrades of the chaparral, keeping well on top, and falling downward over the outer branches. It often grows where the chaparral is thickest, climbing up out of the dense shade beneath and spreading over the top for yards in every direction, making a green coverlet that is decorated with strings of creamy-white, star-like flowers. At this stage it is likened by sentimentally-inclined persons to the covering of some secluded retreat and they call it the "Virgin's Bower." By midsummer the star-embroidered coverlet becomes a fluffy



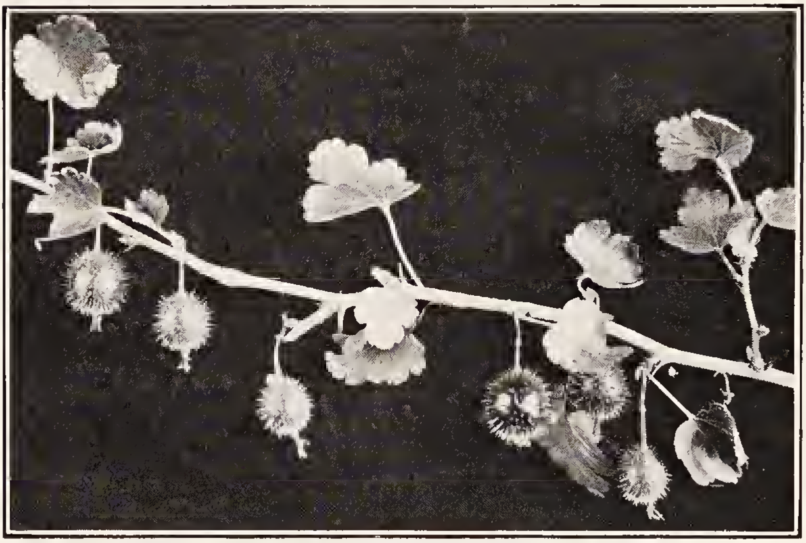


41. Clematis, or Virgin's-Bower *(Clematis lasiantha)*: The Early-Blooming Species.
42. The Late-Blooming Clematis *(C. ligusticifolia)*.

mass of white, downy seed balls. Then to the children it has the appearance of an old gray beard, and they say:

"The Old Man of the Mountains is around again."

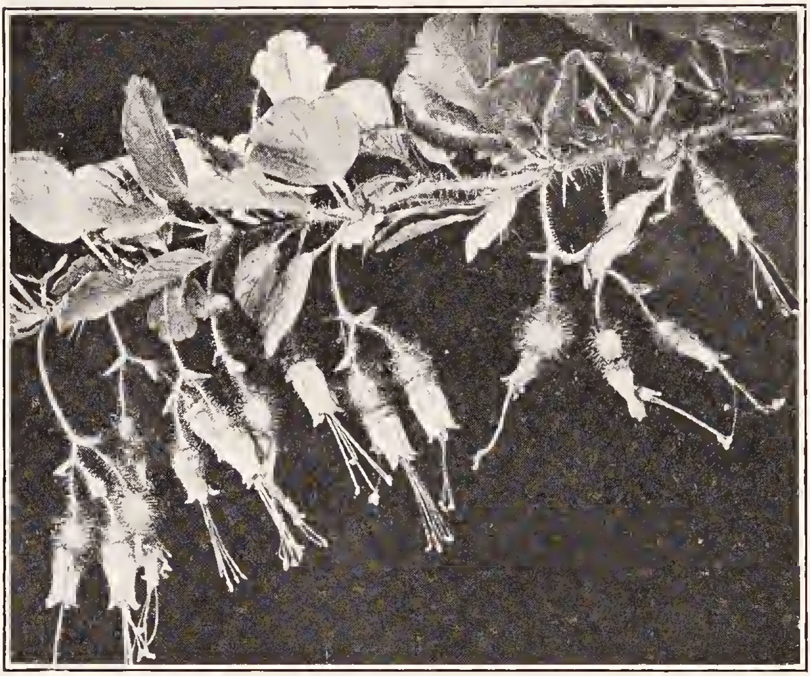
There is also a late clematis *(C. ligusticifolia)* (Fig. 42), which makes its home in the Elfin-Forest. It is more ambitious than its earlier sister, and almost always manages to select its home where there are scrub-oaks of considerable height, or other trees of some stature. For it likes to climb among the limbs of its host for ten, twenty, yes, even thirty or forty feet, where, running out to the end of the branches, it drops long trailing garlands of green and white until they almost or quite reach the ground. The beauty of a tree thus decked out is beyond description. I know of an oak that year after year is thus hung with garlands—as if for a flower festival! Once I camped over night by this tree and saw it so by moonlight, when the starry-white streamers gleamed softly against the dark oak-foliage. This tree stands on the farther side of the Santa Ynez Range, and he who would see it thus adorned, must go in July or August, for that is the flowering time of its decorator, the late-blooming clematis. This clematis is no mean, unimportant factor of the chaparral forest cover, having a good root system and furnishing a large amount of shade. And what it can do in the matter of reclaiming the land that has been fire-swept may be seen in Haines Cañon—just west of Mt. Lukens, near Little Landers—where it has formed extensive mats.



43. Common Wild-Gooseberry *(Grossularia amara).*

We naturally think of a pea as being a vine, but the Elfin-Forest has one that is not. This is the chaparral pea *(Xylothermia montana)*. It's a shrub, and one of most uncompromising stiffness, with the end of every branch and twig ending in a thorn of horn-like hardness. The shrub is seldom more than four or five feet tall, but it has the habit of growing in copses—often on the very ridge which you would like to traverse—which there is no getting through, except by hewing a way. The deep-red pea-blossoms which sprinkle its crown in May may be some little compensation for the shrub's harshness, but I have never felt they were worth the torn clothing, painful scratches, and lacerated feelings for which the stiff thorns are responsible.

For thorniness, the chaparral pea has worthy rivals in the wild gooseberries, of which there are several species. The latter, however, are remarkable for a multiplicity of finer thorns, rather than for hard, stiff spines. Their armor is quite in contrast with the strong, dagger-like prods of the chaparral pea. While all the gooseberries are thorny, some are more so than others, the stickleback of them all being one called the fuchsia-flowered gooseberry *(Grossularia speciosa)* (Fig. 44). This bush goes to extremes in the matter—covering stem, branches, twigs, flowers and fruit with a prickly armor. It is partially justified in this, perhaps, as a protection to its bright, cardinal-hued, fuchsia-shaped flowers, which hang in recemose profusion from slender branches that

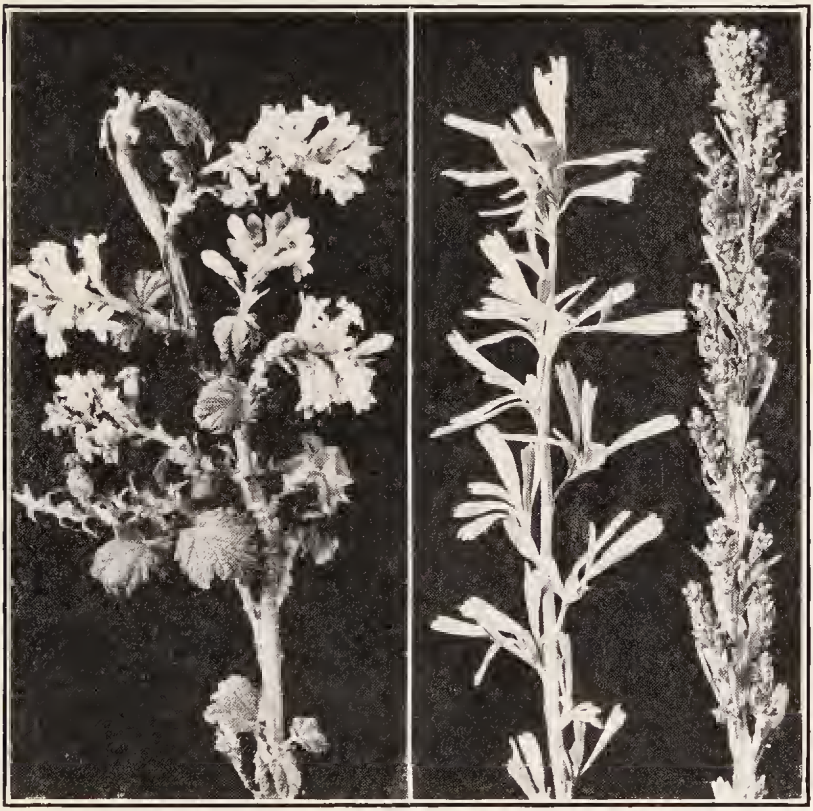


44. Fuchsia-Flowered Gooseberry *(Grossularia speciosa)*.

are often several feet in length. It may be, also, that the berries minus their thorns would be especially palatable to the birds, and that Nature has therefore given them this protection. Whatever the cause, certain it is that the berries of the fuchsia-flowered gooseberry are veritable "thorn-drops." They are too small and too nearly pulpless to be of any economic domestic use. The fruit of the common wild, or cañon, gooseberry is freely gathered for making jelly, as it is much larger and juicier. But these berries, too, are heavily armored with thorns, and to gather them with comfort, one's hands must be protected with good, stout gloves.

The Gooseberry Family is well represented in the Elfin-Forest. Besides the true gooseberries, there are several of their first cousins, the currants. The chiefest of these is the flowering-currant, or "incense bush," as it is often called, on account of its exceedingly heavy and rather agreeable fragrance. Not only are the flowers fragrant, but the foliage as well. One who gathers and carries home an armful of the flowering branches is perfumed as by some invisible spray. The shrub is deciduous, usually some eight or ten feet tall, and of irregular shape. It is not at all noticeable for most of the year, but along in December it comes into its own, for it is the very first of all the new flowers of the year. Then, a little in advance of its oncoming leaves, its bare branches break into bloom and for two or three weeks the shrub becomes a light-pink cloud resting among a thicket of ceanothus, sumac and other chaparral shrubbery. By Christmas time the leaves are overtaking the flowers, and the branches are in fine shape for holiday greenery. They are used to some extent for this purpose, but their keeping quality is so poor, unless they are in water, that other sorts of shrubbery are preferred where the decorations are to remain longer than a day or two. The currants which this shrub bears are of no consequence, being dry and bitter. This early-blooming currant is botanically known as *Ribes glutinosum* (Fig. 45), the specific name coming from the rather sticky, glutinous character of the new branches and foliage. It is a very common shrub in the near-coast mountains of Ventura and Santa Barbara counties.

There are several later species of currants, some with pink and one with yellow flowers. None has such highly scented foliage, however, as the *glutinosum*. One found in the San Gabriel Mountains and westward has a more deli-



45. Incense-Bush *(Ribes glutinosum)*: Usually in Bloom by November.
46. Leaves and Flowers of the Desert-Sage-brush *(Artemisia tridentata)*.

cately-scented foliage, and large recemes of rose-pink flowers; but the flowers are not so numerous and are often much hidden by the leaves. Its blooming time is from January to March. I have found it in fine condition in February among the Eagle Rock hills. Its bright green leaves make it an attractive shrub at any time, but it is especially charming when in bloom. It bears the long botanical name of *Ribes malveceum-viridifolium* (Fig. 47).

In the higher mountains there are two or three other species of currants much resembling the last, but not so robust, nor with such pleasing flowers. The one yellow-flowered species mentioned is principally a dweller of the washes. Both in its flowers and shiny black berries it always reminds me strongly of the old Missouri-currant in the garden of my youthful Middle-West home.

Three berry bushes of the Rose Family find a home in the Elfin-Forest, although no one of them is plentiful. One is a blackberry *(Rubus vitifolius);* another a raspberry *(R. leucodermis),* and the third is the thimble-berry *(R. parvifolius).* The blackberry is not uncommon near the coast and in the moister cañons inland. Its berries have a very good flavor, although they are small and quite scattering on the bushes. When I first came from the Middle-West—where as a boy I had gathered wild blackberries by the ten-quart pailful, and as

47. Wild-Currant *(Ribes malvaceum-viridifolium)*: An Evergreen Shrub with Pink Flowers.

big as olives—these wild Southern California berries were very much of a joke to me. But I have learned not to despise them, for considering the absence of summer rains, they are entitled to much credit for being as good as they are.

The raspberry grows at a higher altitude, being most plentiful up towards the Pine Belt. Its berries have an excellent flavor, but they are so few and far between that one gets hungry searching for them.

The true home of the thimble-berry is in the north, so when we look for it here in the south, we should expect to go to the top of the higher mountains to find it; and we do. Its home here is in the San Bernardino Mountains, and around Mt. San Jacinto and Mt. San Antonio. It is a very scanty bearer in this region, and the fruit which it does produce is even more insipid than in the north—which is saying a whole bookful. Nevertheless the bush is always welcome to my sight for its fine, large leaves and wild-rose-like white flowers.

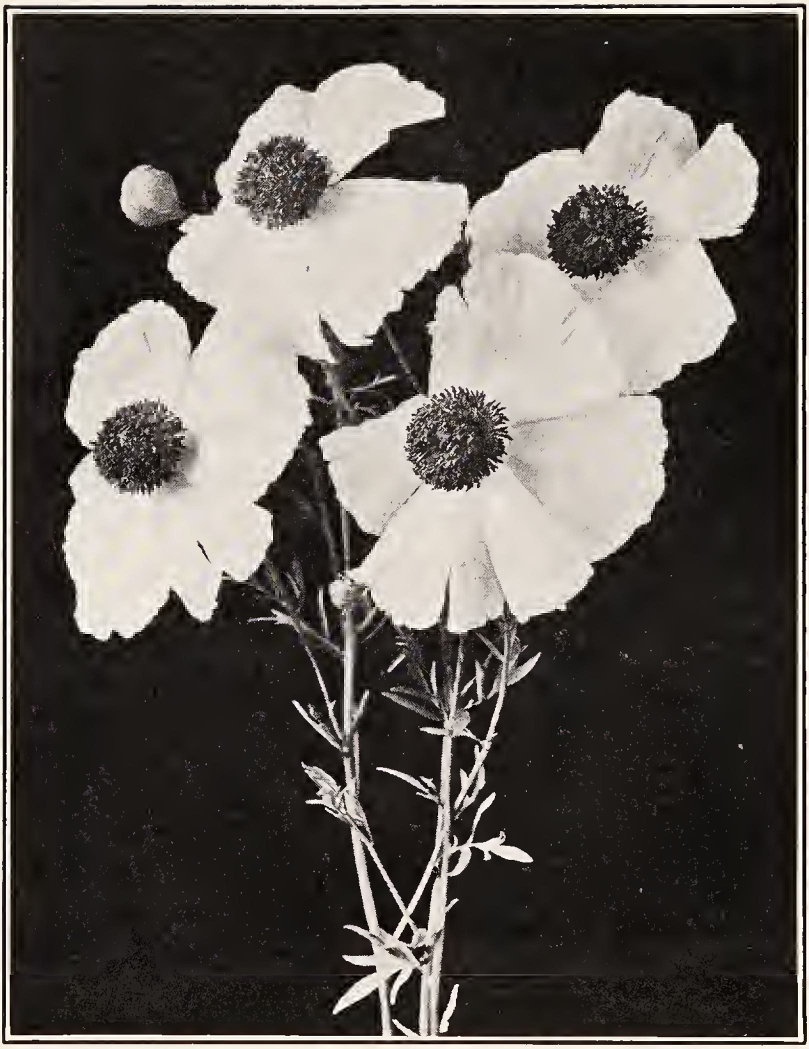
The common desert sage-brush *(Artemisia tridentata)* (Fig. 46) is not a true chaparral shrub, although in a way it is closely connected with the Elfin-Forest, in that it meets the dwarf shrubbery, and even mingles with it to some extent, where the chaparral borders on the desert. But its sister, *Artemisia californica,* sometimes called California sage-brush, is a common shrub in many parts of the chaparral belt. It has the same ashy, gray-green foliage as its desert sister, making it a marked shrub and easy to pick out from the other shrubbery. While it is not so strongly aromatic as the desert sage-brush, it still has an abundance of the pungent odor, as one finds out when he wades through a thicket of it on an exposed slope some hot summer day. The new branches which the shrub sends up each year are covered with such a soft, gray-green foliage that one feels like stroking it—at least I always do—a feeling akin to that of the desire to run the hand over any soft, furry coat we may happen to see. These new branches look as if they would make a nice soft mattress for your mountain-bed; and so I thought when I was new to the Chaparral Trail. One evening a party of us made camp near a thicket of this sage-brush. I gathered several armfuls and made a beautiful, downy-looking bed. But when I lay down upon it, the stuff packed into a wad as hard as wood, and at the same time let me have the full benefit of all the rocks, roots, and inequalities of the ground beneath.

Beware of artemisia when looking for "mountain feathers"!

V

SOME FLOWERING SHRUBS OF THE CHAPARRAL

I RECALL with what surprise I greeted my first tree-poppies. According to my firmly established ideas, poppies should be annuals, coming and going with the seasons, and with a stalk so decidedly herbaceous that great care must be taken in gathering and in handling them, if one wished to make out of them a nice fresh bouquet. On visiting California, I had soon become acquainted with the *Eschscholtzia*—the State Flower—and a little later with its smaller cousin of the foothills and cañons, the Papaver—and they tallied very nicely with my standards of what a poppy should be. But when I took to the Chaparral Trail and found poppies growing on bushes, I was compelled to throw overboard another of my botanical traditions, and to add still another item to the fast-growing list of "California excep-

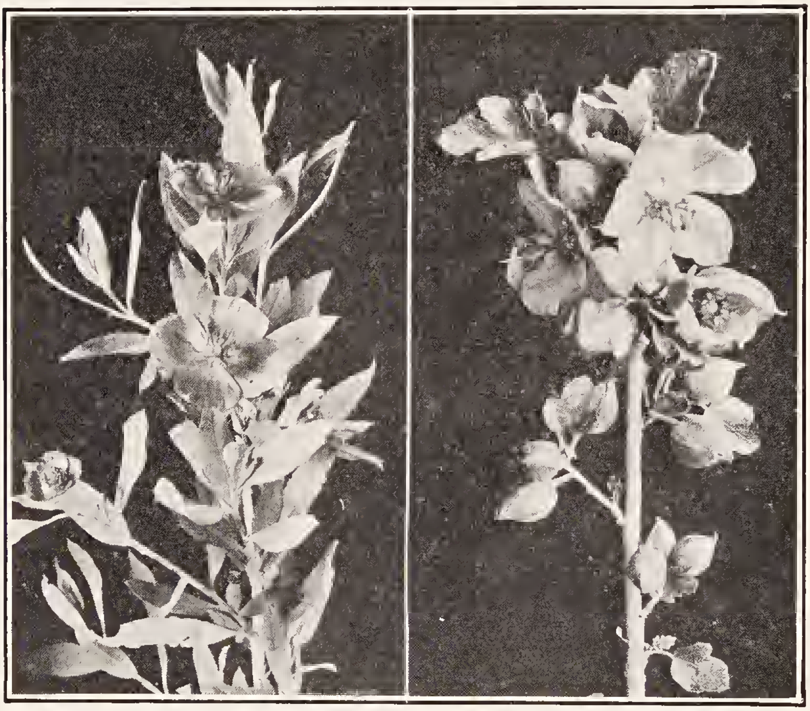


48. Matilija-Poppies *(Romneya coulteri)*: Pure-White, with Yellow Centers: Probably the Largest of all Poppies.

tions to the general rule." Nevertheless, I hastened to make friends with this new-found poppy *(Dendromecon rigidum)* (Fig. 49), for I liked the bright-yellow flowers and the trim bush upon which they grew. And when I found that almost wherever I went in the Elfin-Forest it was there to greet me, I liked it better than ever. And that it strung out its blooming-season from March until late in the summer was another bid for favor.

Half way up the steep bank of the Arroyo Seco, between the Pasadena Avenue bridge and that of the Pacific Electric, on the South Pasadena side, a bush-poppy shrub years ago took up its home. Season after season it has put out a wealth of bloom. People scramble up the steep slope and break off the yellow-flowered branches, until there is scarcely anything left of the shrub but split and shattered stubs. But it never fails to rally from the wreck. Indeed, it seems to thrive on the harsh treatment which is its portion, and each succeeding year comes out with a new crop of branches and a seemingly more abundant spread of yellow.

It was after I had become well acquainted with the *Dendromecon* that I learned it was not the only poppy which grows on a bush in California, but that there was another, larger in both bush and flower, and more attractive in every way. I first made its acquaintance in the garden of a friend, and when he told me it was a native of California, and that when I



49. Tree-Poppy *(Dendromecon rigidum)*: An Evergreen Bush with Bright Yellow Flowers.
50. "California Slippery-Elm" *(Fremontodendron californicum)*.

went out into the mountains I should find it growing wild, I asked him where he expected to go when he died.

"Heaven," he said, and smiled.

I looked at the plant. A great bushy shrub it was, four or five feet through, and sending up slender branches to the height of ten. Scattered over it were at least half-a-hundred five- or six-inch flowers with crepe-white petals and deep-yellow centers, while two or three times as many buds were coming along to keep up the floral display.

"Have you never heard of the Matilija-poppy?" my friend continued.

I shook my head. I was new to California then.

"Well," he said, "this is really a wild California plant. It is said to be the largest poppy known. However that may be, it is surely one of the most famous. It is planted quite extensively for ornament here at home, and has also been taken to many foreign lands where the climate is mild enough for it to thrive. They say that abroad it is very generally known as the California Poppy."

Since that first introduction to the Matilija-poppy I have seen it many times "on its native heath," and in different parts of the Elfin-Forest. It is at its best along the sources of the Santa Ynez River in Santa Barbara County, and in Matilija Cañon—where it seems to have been first discovered—in Ventura County. Its botanical name is *Romneya coulteri* (Fig. 48). A somewhat smaller form is very abundant in the mountains of Orange County, which some botanists are inclined to consider as a separate species, giving it the name of *R. trichocalyx.* The uninitiated, however, see no difference between the poppies of Ventura County and those from Orange, except in the matter of size, and, as a matter of fact, this difference is so slight that very few persons not already informed ever notice it.

One of the showy shrubs, when in flower, of the Elfin-Forest is the *Fremontodendron.* It is more commonly known as "California Slippery Elm," or merely "Slippery Elm," as most persons call it. But of course this is a misnomer, as the shrub is not even closely related to the elms. It belongs to a plant family whose members are almost all tropical. It is to be regretted that its botanical name of *Fremontodendron* is not also in general use as the common name, as it commemorates the Pathfinder—who discovered it on his first expedition into Southern California, coming upon it as he was passing through the Tehachepi Mountains. Its full botanical name is *Fremontodendron californicum* (Fig. 50)—thus commemorating both its discoverer and the State to which it is native.

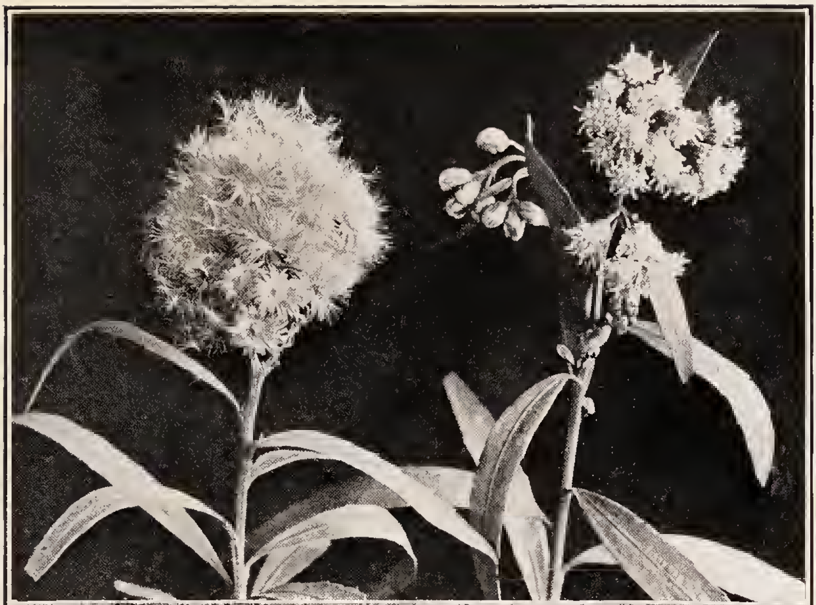
The *Fremontodendron* is sometimes more than a shrub, on occasion running up to full twenty feet in height; but most frequently in the chaparral region it is shrubby. It seems to be semi-desert in its tastes, and here in the South is found most plentifully in the drainage basins of the streams which flow to the desert, and does not seem to venture far beyond the ridges which limit these basins. An exception to this is the upper reaches of some of the tributaries of the Big Tejunga. While it often occurs scattered, yet thickets of it are not unusual. It has large yellow, somewhat cup-shaped flowers, which, by the way, are not what they pretend to be, for the sepals palm themselves off for petals, the latter being entirely wanting. But for all that the shrub frequently carries so much color from its load of bloom that it makes a bright spot in the landscape. I once came down Mill Creek Cañon—a tributary of the Big Tejunga—early in June when in places it was literally golden with the *Fremontodendron* in bloom.

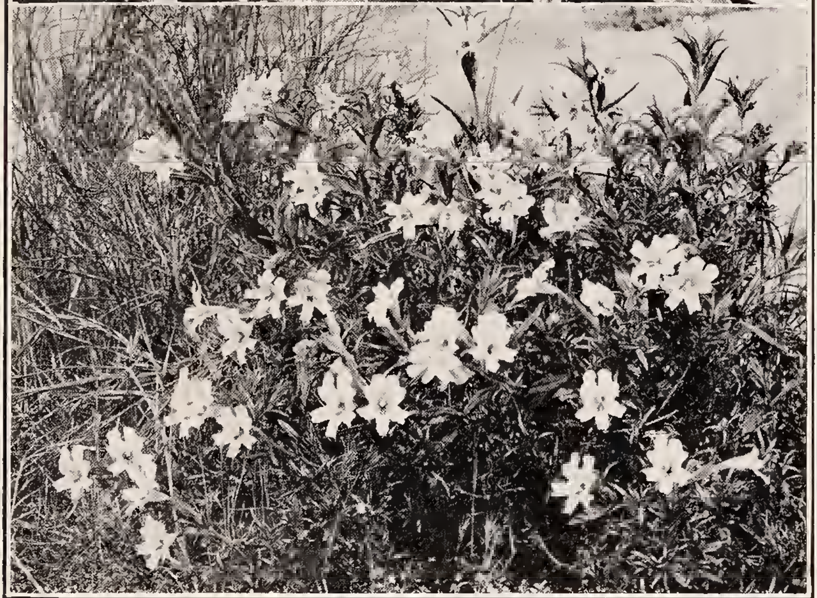
The *Fremontodendron* is another one of the California shrubs which has been extensively distributed to different parts of the world for ornamental purposes. It might well be brought into our own parks and gardens. It seems to be a hardy shrub out in the wild and stands a good degree of frost. It got its name of slippery elm because of the character of the bark, which has a mucous quality very much like that of the eastern slippery elm. It is said to be equally efficacious when used for a poultice.

Covering very much the same region as the *Fremontodendron* is the California Buckeye. It is very much of the same stature, too, except that it is bushier. In flower and nut it very much resembles the eastern buckeye, but in size it is a dwarf by comparison. It is deciduous, and like its eastern cousin, in the springtime it is a mass of bloom. The flowers are white, fading to pink. They are fragrant to such a degree that the air around where the shrubs grow thickly is almost disagreeably heavy with the odor. The leaves are large and palmately arranged, and give a handsome effect to the tree. While the buckeye nowhere grows thickly enough to form copses, yet in the regions where it is plentiful—as for instance around the west end of the Mojave Desert—it is a real factor of the Elfin-Forest growth.

There are several shrubs which make their home largely along the streams and washes, and which, although they are not usually considered as chaparral, really play an important part in the conservation of the land. Among these are two or three species of willow, a *Baccharis* and a *Senecio.* The willows and the baccharis closely border the courses of the streams, and even invade the sandy and rocky beds themselves, thus preventing a vast amount of erosion and washing. And the shade they afford stops a great deal of evaporation and very much modifies the local temperature. The baccharis *(B. viminea)* (Fig. 51), is commonly called "mule-fat," because animals browse freely upon it when ordinary forage runs short. On account of its long, slender leaves and its habit of growing along streams, most persons take it for a willow; but its brittle wood — almost herbaceous in character — and composite flowers show that it is not even closely related to the willows. It is a generous bloomer and may be found in flower almost all the year around. Like the willows, it has "fly-away" seeds, so there is little danger of its tribe ever decreasing.

The *Senecio* mentioned is the one commonly known as "creek-senecio" (Fig. 59), although it does not grow down close to the water, like the willows and mule-fat, but in the gravelly and drier parts of the washes, and even up on the secondary benches of the stream courses. Its bright yellow flowers make a very noticeable feature of the landscape in September and October; and if the season isn't windy, by the early part of November it is living up to the





51. Baccharis, or "Mule-Fat" *(Baccharis viminea)*: A Willow-like Shrub Growing along Streams and in Low Places.
52. Bush Monkey-Flower *(Diplacus longiflorus)*: Often Called "Sticky Monkey-Flower."

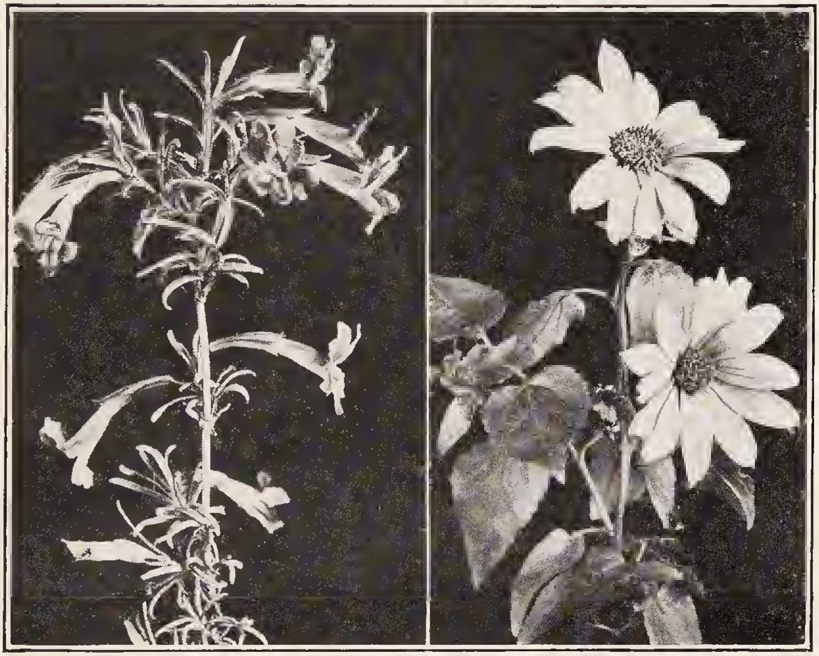
name the Old World botanist gave the genus so long ago, "Senecio"—that is, "Old Man"—and is covered with a multitude of gray-white seed-balls. On account of its gray-green slender-leaved foliage, it is often taken to be a relative of the desert sage-brush; and, indeed, it is not so very distantly related. It belongs to the Grounsel Tribe, while the sage-brush is classed with the Mayweed Tribe—two closely related groups of the Compositæ.

There are several species of the bush monkey-flowers in the Elfin-Forest, at least two or three, perhaps more, as the botanists are not altogether agreed in the matter. Two of them, however, seem to be pretty well defined. One of them is *Diplacus longiflorus* (Fig. 52), and the other *D. puniceus* (Fig. 54). The former is abundant in Los Angeles county and the adjacent regions, while the latter is found southward toward the Mexican boundary and on the islands off the coast. The *longiflorus* varies in color from a very pale corn-color through yellow and orange to an orange-red; the *puniceus* is almost constantly a dark-red. The flower of the *puniceus* is the smaller and more slender of the two; so that through shape and color it is quite easily distinguished from the other form. The shrubs of the two species are very much alike both in shape and foliage, and both seem deserving of the common name by which the two are indiscriminately known, "sticky monkey-flower"—which comes from the glutinous character of the foliage and herbaceous-like stems of new growth.

53. Cliff-Aster *(Malacothrix saxatilis)*: A Shrub of the Sea Cliffs.

The bush monkey-flowers do not form an important part of the chaparral-cover, and by the Forest Service people are even considered a negligible quantity. But they are not so counted by many of us who frequent the mountain trails for the pure enjoyment which a life in the open brings. For us they are a very evident part of the chaparral, and the bright patches of color which they paint here and there on the foothills and string along the borders of the trails are pictures that remain long in memory. In early summer the bushes are veritable bouquets of bloom and they keep up the display for a long time. The shrub likes blooming so well that there is scarcely any time of the year when you cannot find at least a few flowers.

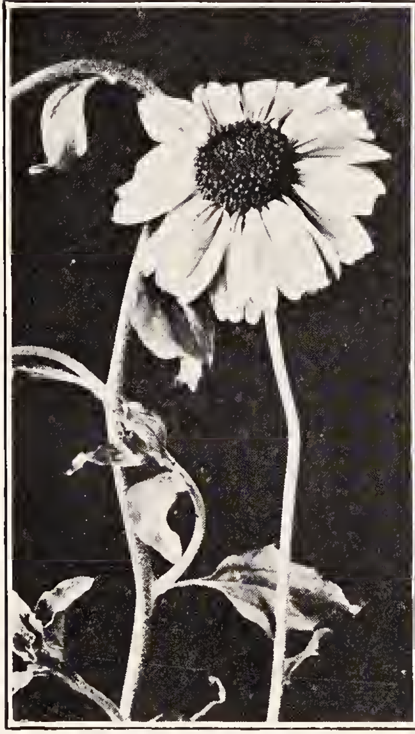
Venegasia carpesoides (Fig. 55), is a suffrutescent shrub of the Coast Ranges. It apes the sunflower in the appearance of both foliage and bloom, except that the flower has an orange center. Its habitat is not that of the sunflower, however, as it seeks the moist cañons and shady places of the mountain slopes. It is evergreen, and its foliage is attractive all through the year. In moist cañons it is ever-blooming, too, and we often find it at its best in mid-winter. Its generic name is for Father Venegas, one of the Franciscan missionaries.

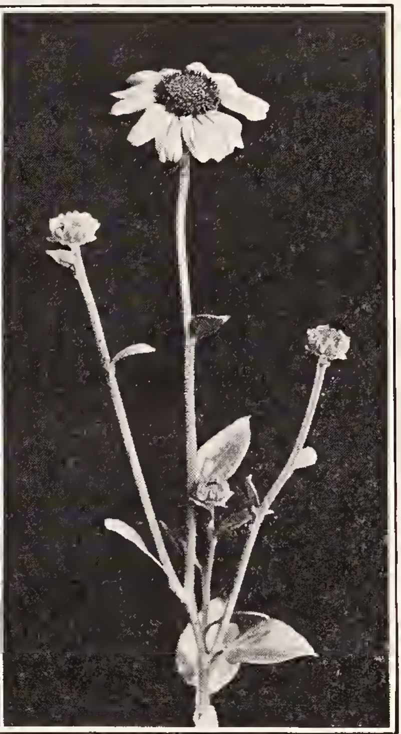


54. Red Monkey-Flower *(D. puniceus).*
55. Venegasia *(Venegasia carpesoides)*: Sometimes Called "Cañon-Sunflower."

This is the only case which has come to my notice where any of the Mission Fathers has been so remembered.

From April on through the summer the foothills of the chaparral country in many places are yellow with countless blooms of the encelias. Of these there are two species, *Encelia*





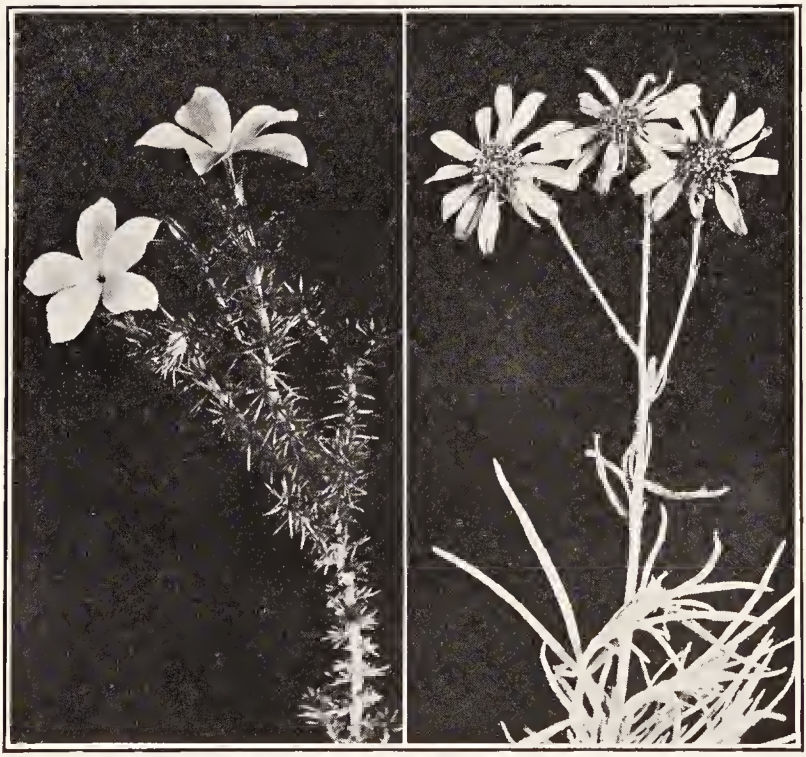
56. Encelia *(Encelia californica)*: A Low Shrub which Grows in Great Profusion along the Coast.
57. Golden-Hills or Brittle-Bush *(Encelia farinosa)*: An Inland Shrub of Wide Distribution.

californica (Fig. 56), and *E. farinosa* (Fig. 57). The former ranges from Los Angeles county westward and northward, while to the eastward the latter holds sway. They do not mingle to any great extent, their ranges meeting almost abruptly in the eastern part of Los Angeles county. The flowers of both species are yellow, but the *californica* has a dark-brown center, while the *farinosa* has an orange one. The stalks and foliage of the latter are "floury," whence comes the specific name. The encelias have substantial woody bases, usually two or three feet in height, above which there is a generous top that is largely herbaceous. They are not classed by the Forest Service even among the unimportant chaparral species. But I think this must be an oversight, at least in regard to the species of the Coast Ranges, which in many places is copse-like in its development.

"What is that cactus-like bush covered with small wild roses?" I'm quite sure I hear you exclaim when you go out into the foothills in April or May for the first time.

That! Why, that's a gilia. Or rather it was a gilia, until the botanists a few years ago discovered that it wasn't altogether orthodox. Now they call it *Leptodactylon* — *Leptodac-*

tylon californicum (Fig. 58). But common people such as you and I call it phlox, "prickly-phlox." The "phlox" comes from its belonging to the Phlox Family, and you find out where the "prickly" comes in when you try to gather some of it. It doesn't look anything



58. Prickly-Phlox. *(Leptodactylon californicum)*: Bright Pink Flowers; Prickly, Hostile Stems.
59. Creek-Senecio *(Senecio douglasii)*: A Shrub with Gray-green Foliage and Yellow Flowers which Later Turn into Silvery "Gray-heads."

like the "Sweet William" of the eastern woods, yet when I came to California I immediately transferred to it the allegiance which I once gave to the wild blue phlox *(Phlox maculata).* I think it was partly on account of the way in which the flowers held themselves, although their delicate perfume may have had something to do with it. When in bloom the shrub is a beauty, sprinkled as it is with a shower of pink. The flowers look as if they grew in clusters, but they don't. Each one is at the tip of a prickly stalk of some length, and these stalks have the habit of thrusting themselves upward in close company, as if they were vying with one another in a race to see which can reach the highest point before blooming. It may be, however, only because of a sociable nature. This sociable habit makes it easy for us to gather an armful of the flowers. But we must be careful how we go about it! The stems are brittle—which helps some—but the prickles are long enough and strong enough to win our respect, and to make us put on gloves before we tackle them. The flowers are fragile, too, and careless handling spoils them. After all, they look better as natural trail decorations than when crowded together in a vase.

The prickly phlox is at its best from March until June, but we are likely to find stray blossoms almost any time of the year we have a mind to look for them. The shrub grows quite generally throughout the Elfin-Forest, but is nowhere plentiful enough to be classed as of any considerable importance as a forest-cover. But nevertheless it adds some little to help make up the great whole. And as a decorative feature of the chaparral landscape it is justly entitled to a high station.

On the seaward side of the coastwise mountains in the chaparral belt we find another decorative shrub. This is the cliff aster *(Malacothrix saxatilis)* (Fig. 53). It has a woody trunk two or three feet in height and a crown of brittle, semi-herbaceous stems, and is endowed with an abundant fringy foliage. On bright sunshiny days nearly the whole year through, the top is plentifully set with white composite rosettes an inch and a half or two inches across. These composite flowers are made up of rays only—after the pattern of the dandelion—which gives them a fringy appearance in harmony with the foliage. At night and during foggy days, the flowers close up and take on an elongated, bud-shape form, and are almost completely lost among the foliage. During continuous heavy fog they may remain closed for days at a time, only to open with the coming of sunshine. It is a generous winter bloomer. One of the finest bouquets I ever gathered of it I brought in during the Christmas holidays from along the ocean cliffs near Santa Barbara.

Away from the ocean, *Malacothrix tenuifolia* takes the place of the cliff aster, but it is in no way the equal of its fog-loving sister. Its stalk is straggling, the foliage very sparse, and the flowers much smaller. In every way it suffers in contrast with the Malacothrix of the sea cliffs.

It may be observed that some of the shrubs dealt with in this chapter have quite a little of the herbaceous in their makeup. I wish to add that there is a numerous group of those which are even more herb-like. These will be taken up in the next chapter.

VI

LESSER ONES OF THE ELFIN-TREES

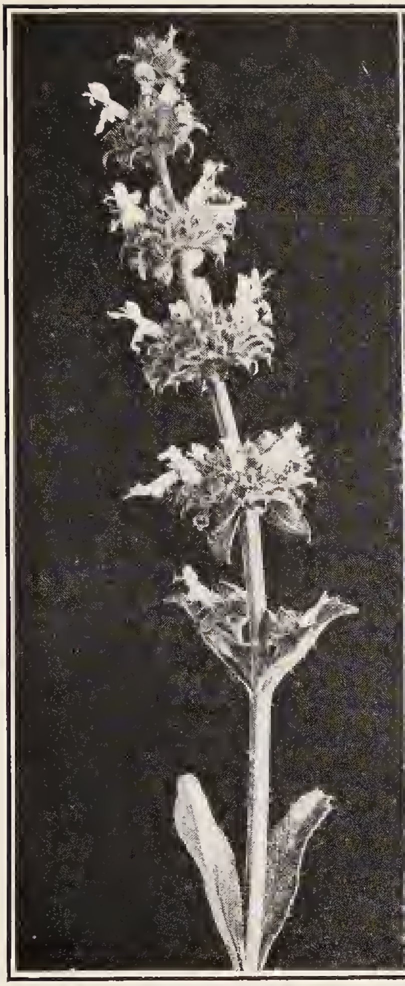
THERE is a whole troop of chaparral-shrubs of lesser stature. Most of them are suffrutescent, that is, with a woody base from which each season herbaceous or semi-woody stalks shoot upward, bloom, bear a bounteous crop of seed, and then die with the coming of autumn. These shrubs play a large part in the change which takes place on the chaparral-covered slopes in the passing from the dry season to the wet period, and also from wet to dry.

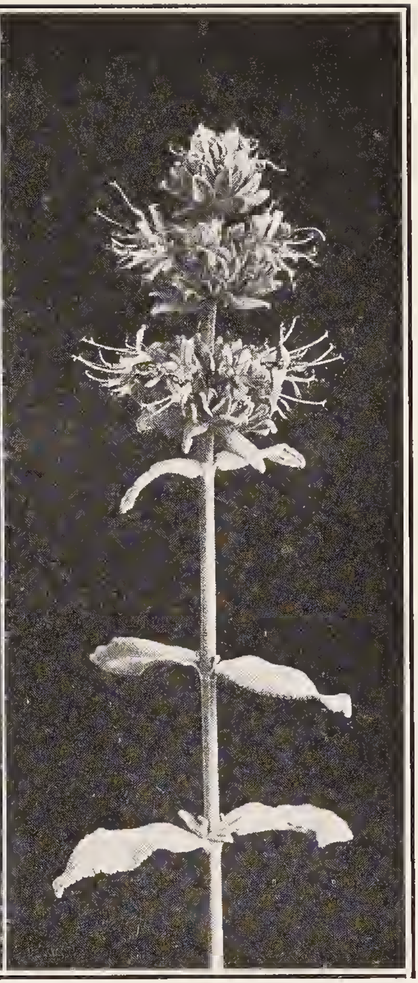
There is no hard-and-fast line, on one side of which we place the shrubs that are wholly woody, and on the other side of which belong those that are partly herbaceous; yet, as a rule, we may say the latter are of lesser stature. These form a very important part of the chaparral cover, and were they wanting, the land of the Elfin-Forest would wear a different aspect, indeed. Besides the green of their foliage, they furnish floral color of bright and various hue which becomes a lure that irresistibly leads us out on to the Chaparral Trail.

These "lesser shrubs" are of vast importance for the service they render as part of the forest-cover. They often occupy areas that none of the larger shrubs seems willing to take: they have extensive root systems that hold the soil in place, retard erosion, and break up the rock formation beneath; they shade the ground and prevent an enormous amount of evaporation; and through their foliage and herbaceous stems make a contribution of incalculable value to the leaf mold—the richness of the soil. This contribution goes on year after year, silently, unheralded, and largely unnoticed—but nevertheless a gift of Nature to the children of earth beside which all the mineral wealth annually taken from the bowels of the hills dwarfs into insignificance!

No group of these lesser ones of the chaparral shrubs is of more importance than the so-called "sages." They are not only found from one end of the Elfin-Forest to the other, but they also are often overwhelmingly abundant over leagues of territory at a stretch. There are several of them, and when you try to learn to know them, it may bother you for some little time to tell "t'other from which." But if you tackle the business resolutely, and pin them down one at a time, and keep it pinned down, in the end you will have them all successfully corralled. To begin with, it is well to remember that the botanists have broken up the old genus, *Salvia,* to which the true sages belong, and have been lopping off species from all sides of it which they have organized into new genera. Only two Southern California species are now left as true sages, and both of these are herbs. But there are several chaparral shrubs which are called sages—and which will continue to be called sages to the end of time. And for most persons they meet the conditions —really set the fashion, as it were—of what a sage ought to be. The botanists call them *Ramonas.*

For rankness of odor, the Ramonas easily outclass all their chaparral associates. Indeed, there are only two or three other California plants of any description that can outdistance





60. Ball-Sage *(Ramona stachyoides)*: Often Called "Black Ball Sage," or Simply "Black-Sage": Most Widely Distributed of all the Ramonas.

61. Button-Sage *(Ramona nivea)*: Sometimes Called "White Ball-Sage." The "Beauty" of the Ramonas.

them in this respect. Some of them are worse than others, but any one of them is bad enough. But they have redeeming qualities which bring down the other side of the balance with something to spare—as will be shown further along. They are apt to grow in masses, and often border the trail and hang over it where every passer-by brushes against them, bruising the leaves and stems, and carrying away on his clothing a generous supply of the undesirable perfume. On a hot summer day the odor from these thickets of sage is almost unendurable.

Three of these chaparral Ramonas are especially plentiful: "Black-Sage," or "Ball-Sage" as it is frequently called; "White Ball-Sage," or "Button-Sage" as the forest ranger knows it; and "White-Sage." The flowers of the first two grow in whorls, simulating balls or buttons. Those of the black-sage are small, and are either white or pale lilac. They usually have little claim on our attention or admiration. Sometimes, however, the spikes are so full of bloom as to make quite a showing. The plant is an early bloomer, frequently coming along in February or March. The botanist calls it *Ramona stachyoides* (Fig. 60).

Button-sage *(R. nivea)* (Figs. 61 and 62) is the beauty of the Ramona sisters. Having numerous blooms, each from half an inch to an inch in length, in May and June she paints square leagues of the mountainside in lilac and lavender-purple, and gladdens the borders of the trails for mile after mile with the same pleasing hue. She is a great friend of the bees, and distils tons upon tons of the finest nectar that finds its way to California markets via the beehive. The honey may not be quite so clear

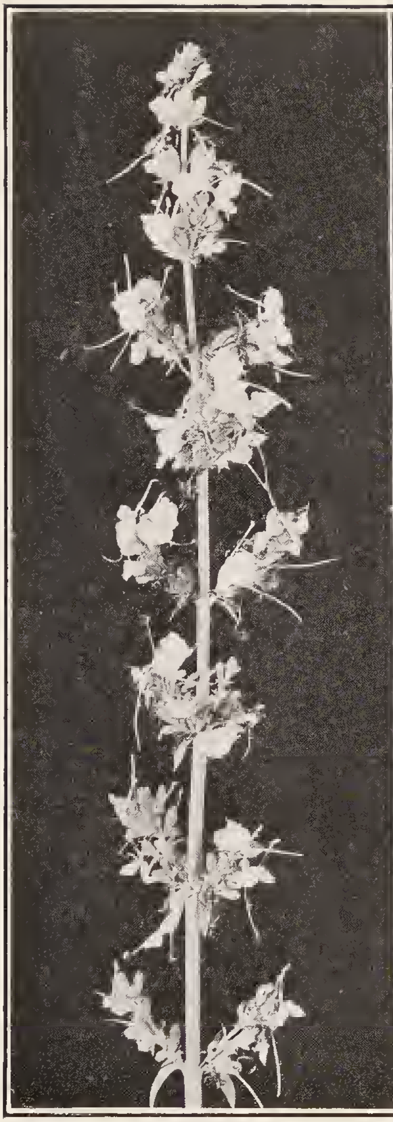
62. Thicket of Button-Sage.

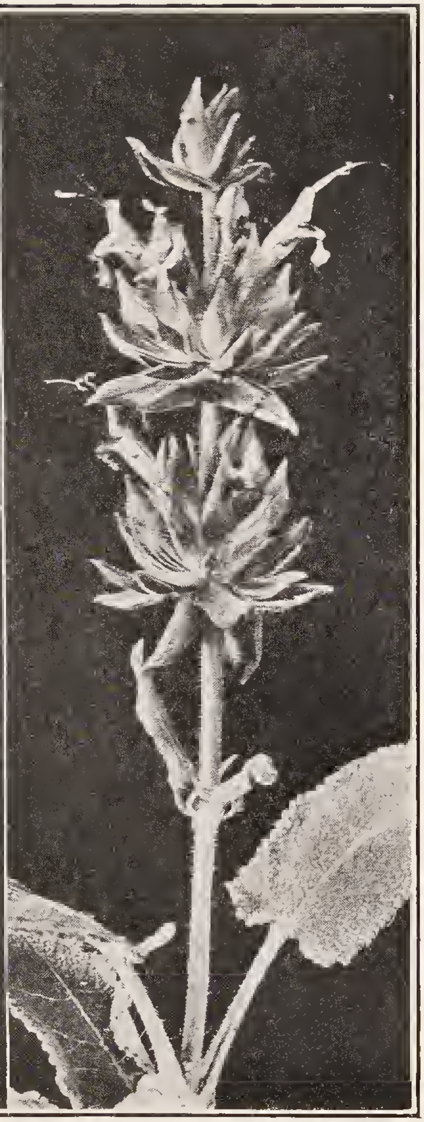
as that from the white-sage, but it is minus the "sagey" taste which sometimes tinges the latter product.

The kingdom of the button-sage lies north and west of the San Fernando Valley. Just why it should be so plentiful in Santa Barbara and Ventura counties, advancing as far eastward as the San Fernando Hills, then stop short and apparently refuse to go farther, no one knows. But it seems to have set the definite limit beyond which it will not go.

The white-sage (Fig. 63) is the latest of the three to bloom, coming along as the button-sage begins to fade. The stalks are tall and graceful, and the white flowers striking and unique. When you first meet her, you feel that you must have an introduction at once, and without delay you proceed to lay loving hands upon her. But one caress is enough, for with the first touch you arouse an exceedingly strong and pungent odor. And henceforth you are content to admire her from a distance.

All these chaparral sages have woody bases from which they annually send up shoots which bear the foliage and flowers. Late in the sea-





63. White-Sage *(Ramona polystachya)*: Rank of Odor, but a Wonderful Honey-Plant.

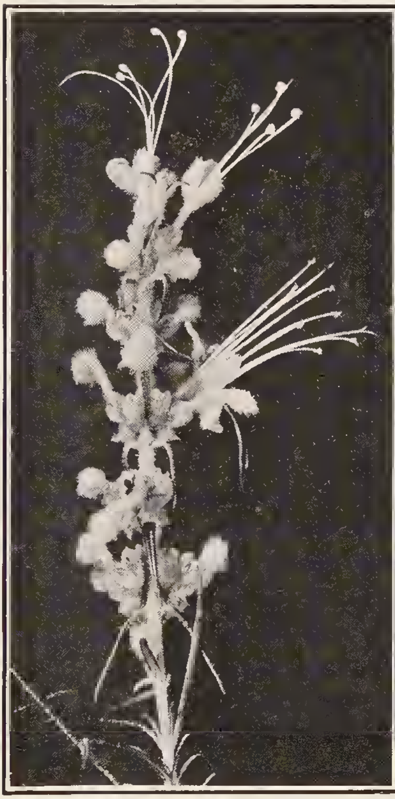
64. Hummingbird's-Sage *(Ramona grandiflora)*: Largest Flowered of all the Ramonas.

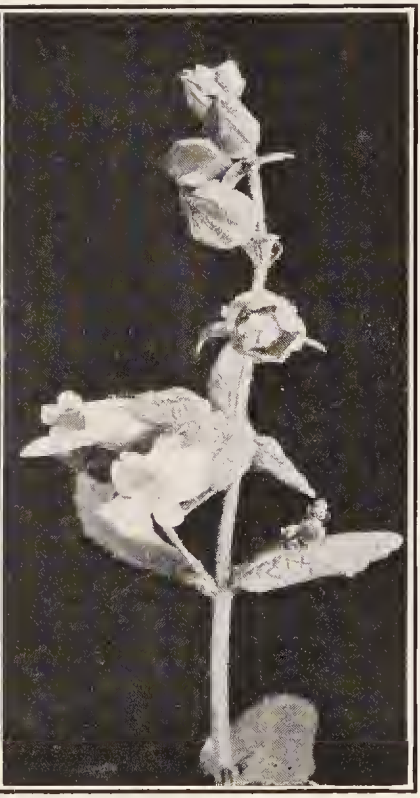
son the seed-whorls and foliage are dry and very inflammable; for which reason the sages are no particular friends of the rangers and fire guards.

Hummingbird-sage *(R. grandiflora)* (Fig. 64) is another Ramona of the chaparral. As its specific name indicates, it is the big-flowered one of the group. It is somewhat solitary in its habits, has coarse leaves, and bears large red flowers. It would be almost stretching the fact to call this plant a shrub, as the few inches of the perennial base above the ground contain very little wood. The plant is not quite so rank-scented as the other Ramonas, yet it is the least attractive of the lot.

There is another one of the Ramonas, the *incana,* which makes its home on the desert and along the borders thereof. But it scarcely enters into the composition of the chaparral, and is only here mentioned because it is so often noticed by those who visit the desert or its bordering rim. It has sky-blue flowers that are thrust up out of dense whorls of red or wine-colored bracts, the whorls often being so crowded as to form a sort of spike. The combination of colors is so striking that it never fails to attract attention. Its blooming time in the Mojave Desert is May and June.

The Ramonas have a cousin by the name of "Woolly Blue Curls" that has their manner of growth. Its botanical name is *Trichostema*





65. Woolly Blue-Curls (*Trichostema lanatum*): The "Romero" of the Spanish.
66. Pitcher-Sage (*Sphacele calycina*): Sometimes Called "Wood-Balm": Endowed with an Agreeable and Persistent Odor.

lanatum (Fig. 65). While its coquettish mien and general make-up warrant the fantastic appellation by which it is usually called, I confess to a preference for the name by which the Spanish-Californians know it—"Romero." That there is a dash of sentiment connected with this name is perhaps the reason. "Romero" is the Spanish for "Rosemary," and it is quite a compliment to the California shrub that it should be considered worthy in fragrance and dress to receive the name of the Old World prime favorite. Although it is closely allied to the Ramonas, its pleasing fragrance is in decided contrast with the aggressive smell of its loudly-odoriferous cousins. It is a late summer bloomer and does not come into its own until the sages are on the wane. Then its numerous spikes of violet-woolly flowers, from which project the extremely long, curving stamens, shoot up here and there wherever the more tree-like chaparral is of open formation.

There is another shrub of the Elfin-Forest belonging to the Mint Family, and therefore cousin to the Ramonas. Its sage-like stems and leaves have earned for it the name of "sage," to which "pitcher" has been prefixed, on account of its large open-mouthed, deep-cupped flowers. It is *Sphacele calycina* (Fig. 66), the only one of its genus in the Elfin-Forest. Although it is generally known as "pitcher sage," yet some persons prefer to call it "wood balm," a name which has come to it through the rather agreeable odor with which it is very liberally endowed. Brush against it as you pass along the trail, and you will carry away with you a minty scent. Carry a spray of it in your pocket for a few hours, and your coat will be haunted with its memory for many days. On the occasion of my first discovery of this interesting mint, I broke off some of the flowering shoots, wrapped them carefully in a paper cone, and stuck them stem-end down into my hunting-coat pocket, intending to photograph them when I got back to camp. But on account of getting in late, the flowers were forgotten. My coat was folded and used for a pillow that night. Although the crushed and crumpled flowers were thrown away the next day, their fragrance still remained in the coat when I returned home about a week later, and my wife was kept busy for "quite a spell" trying to locate the brand of her new perfumery.

I rather like the mathematical precision with which the flowers and leaves of the pitcher-sage are arranged, the former paired and in the axils of the opposite leaves. But I should like the flowers better, if they were either a pure-white, or else had enough pink in them so as to leave no doubt as to what color they really wanted to be. In the higher mountains of the inner Coast Ranges they usually do have more color, sometimes being a positive pink-lavender.

Even more plentiful than the sages is the "wild buckwheat" *(Eriogonum fasciculatum)* (Fig. 67). There are several species of Eriogonum, a number of which are often referred to as "wild buckwheat," but the *fasciculatum* would seem to be deserving of the name for itself alone, both from its appearance and its prominence as bee-pasture. Its shrubby base is very low, but the herbaceous shoots often rise to three or four feet. It bears a multitude of flowers of the same general shape and appearance as those of cultivated buckwheat.

Time and time again, when on the trail where it led through solid fields of wild buckwheat, I have been reminded how like the scene was in appearance to the fields of "tame" buckwheat which once grew on my father's farm

67. Wild-Buckwheat *(Eriogonum fasciculatum)* : Most Plentiful of all Bee-Pasture.

in the Middle-West. Perhaps one reason why wild buckwheat is so plentiful is because there is so much ground on which no other plant is willing to live, while it does not seem to be at all particular in the matter, but cheerfully homesteads any vacant place not yet taken up.

68. California-Fuchsia *(Zauschneria californica)*: Also often Called "Hummingbird's-Trumpet."

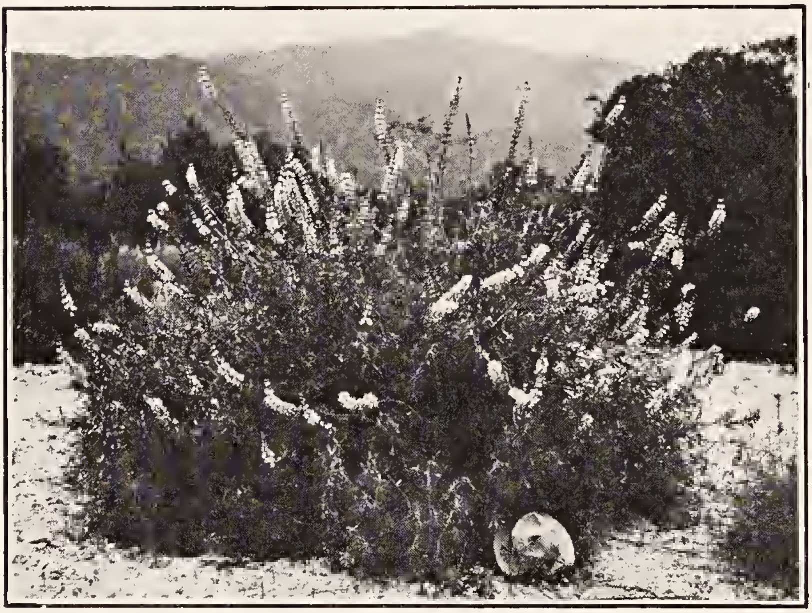
A close competitor of the wild buckwheat in the matter of "squatting" any otherwise unoccupied land is the "deer weed" *(Ansisolotus glaber)* (Fig. 72), also called "wild broom." In appearance, it is a miniature edition of the cultivated broom, although its flowers are not of so pure a yellow. One of the most interesting things about this plant is that is occupies a position about as near midway between a shrub and an herb as it is possible to find. It is classed as a perennial and has a woody base; but its whole top is quite herbaceous, and its life-period is only two or three years. When not cut down by frost, it blooms pretty much the whole year through, even struggling along through the droughty summer and fall months, although the blossoms at that time are not more than half their normal size. On rocky hillsides and gravelly flats it may be scarcely more than ten or a dozen inches in height, while in rich soil its herbaceous wands may grow to almost as many feet, falling over and becoming almost vinelike in extension and appearance.

The deer weed seems to be on the watch for the first winter rains and soon sends up its new shoots when the longed-for moisture comes. As the tender shoots rise, they are covered with flower-buds, between which a few green leaves try to peep forth; but they are lost in the floral rush, and the result is a bunch of slender wands of yellow and orange bloom that keep lengthening upward and spreading outward, until the summer drought comes again and stops all growth. When we admire the deer weed, it is the "ensemble" of bloom that we see, and which then reminds us of the flowering-broom of our gardens. Yet each little bloom of the hundreds and hundreds on some small bush is worthy of individual and minute attention, for it is as dainty a pea-blossom as you will find in the whole papilionaceous tribe. The plant derives its name of "deer weed" from the fact of its serving as deer forage. It is said, however, that the deer do not browse upon it until late in the season, when other forage which they prefer has grown scarce. As bee pasture the deer weed is counted valuable, because of its lasting nearly the whole year through.

With the exception of the sages, perhaps no class of the herbaceous-topped shrubs is more striking than the bush- or tree-lupines. In the minds of many persons, lupines are annuals; they come in the spring; they bloom, fruit, scatter their seeds, and disappear with the coming of autumn. That is the general idea, and of course there are many such lupines. But there are others, too; shrubs of such stature as to rank with other tree shrubs of the Elfin-wood. Among these is the large yellow lupine *(Lupinus arboreus)* (Fig. 69), which commonly grows to the height of six or eight

69. Yellow Bush-Lupine *(Lupinus arboreus).*

feet, and which has a bushy crown several feet in diameter. Its flowers are canary-colored, very fragrant, and the largest of all the lupines. While it is most likely to be met with on the exposed sand mesas, yet I have run across it far within the Elfin-Forest.

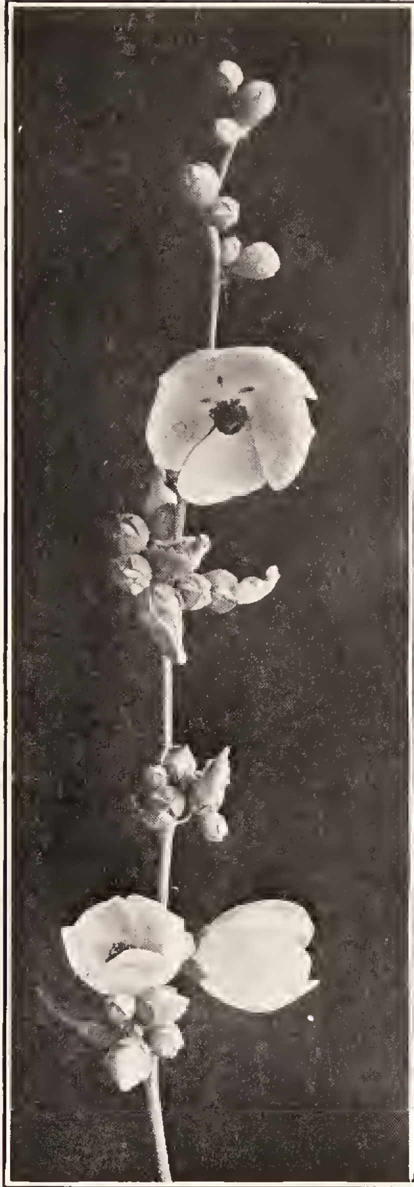


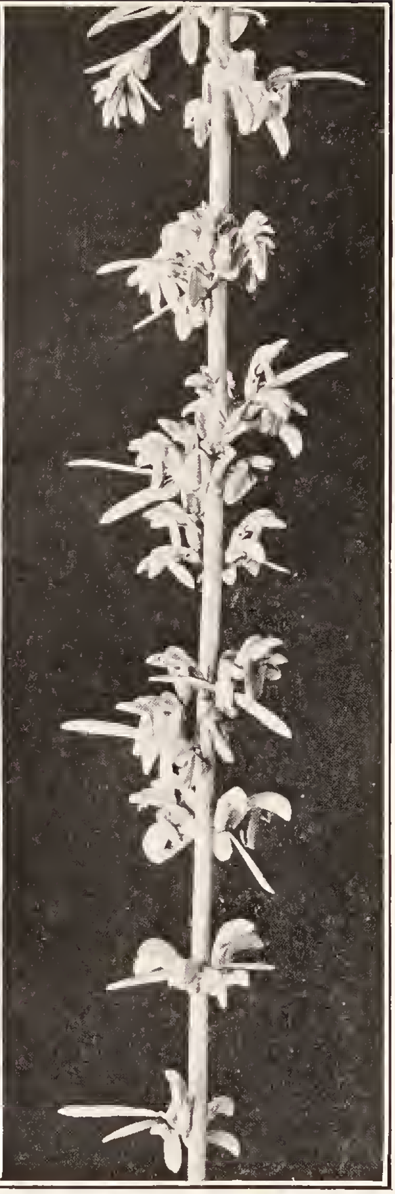
70. Purple-Flowered Bush-Lupine *(Lupinus albifrons).*

Another lupine which is so decidedly shrubby as to locally go under the name of "bush lupine" is *Lupinus albifrons* (Fig. 70). I have seen clumps of it near Monrovia seven or eight feet tall, spreading to the same extent, and bearing not less than two-hundred foot-long spikes of purple-lavender flowers. And all apparently from the same root!

There are still other bush-lupines of the Elfin-Forest, some of them almost as shrubby as those above mentioned.

Here and there in the Elfin-Forest we find shrubs of the Mallow Family. There are three or four species, and all have pinkish or light-rose-purple flowers. They are all more or less covered with a canescent woolly pubescence that makes them decidedly noticeable among the darker chaparral by which they are surrounded. Their tall, wand-like branches are brittle and unmistakably herb-like (Fig. 71). The shrubs keep on blooming until late in the fall, although the flowers—which are often nearly two inches across at the beginning of the season—keep getting smaller and smaller, until the very last ones are no larger than one's thumb nail. Late in the summer the tips of the slender branches mysteriously begin to disappear, and wherever there is a thicket of the shrub, it will look as if the whole patch had been lopped. It is the work of the deer, who





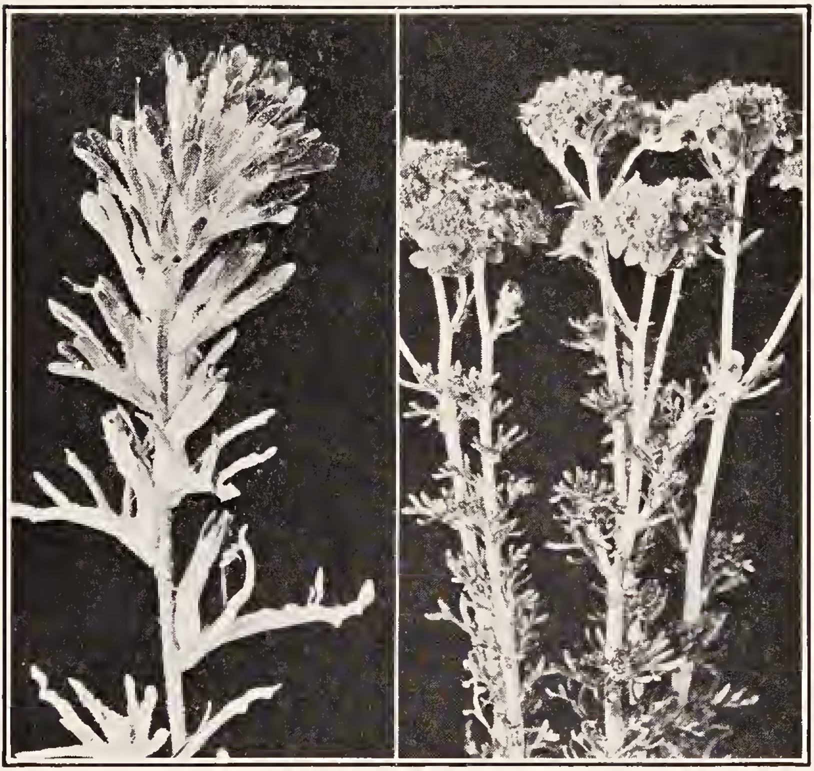
71. Spray of Bush-Mallow *(Malvastrum fasciculatum)*: A Favorite Forage of the Deer.
72. Deer-Weed *(Anisolotus glaber)*: Also Called "Wild-Broom."

evidently consider the bush malvas a "table delicacy."

Others of the chaparral plants whose make-up and manner of life are on the borderland which separates woody from herbaceous structures are two or three species of nightshade, the "California fuchsia" *(Zauschneria californica)* (Fig. 68); "Scarlet paintbrush" *(Castilleia)* (Fig. 73) of two or three species; and some others of less frequent occurrence. To this list we must not forget to add the "Golden yarrow" *(Eriophyllum confertiflorum)* (Fig. 74). And the list is still far from complete.

The golden-yarrow flourishes quite generally throughout the Elfin-Forest. Its herbaceous shoots are usually numerous, and are liberally clothed with gray-green, woolly foliage and crowned with compact heads of bright yellow flowers. Often a single clump of it is conspicuous enough to attract notice for a long distance away. Occasionally one finds solid patches of it, or lines of it bordering and overhanging the trail. Its blooming time is from May to late in the summer.

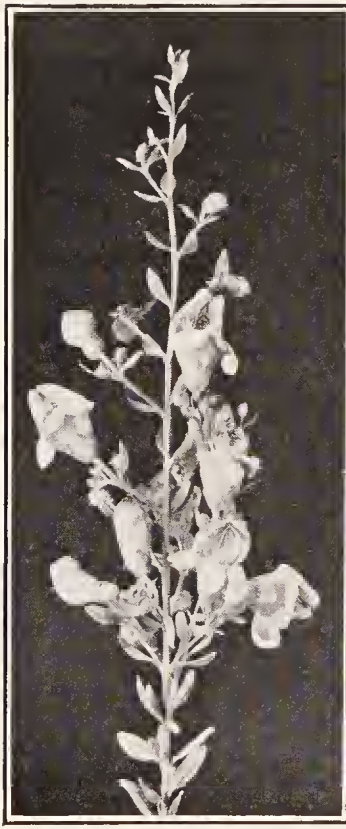
After the golden-yarrow has faded for the season, a shrub of more slender growth begins to fleck the chaparral with bits of scarlet, most frequently choosing for its home the steep, rocky sides of the cañons. This is the California fuchsia *(Zauschneria californica)*. It is sometimes called "hummingbird's trumpet,"

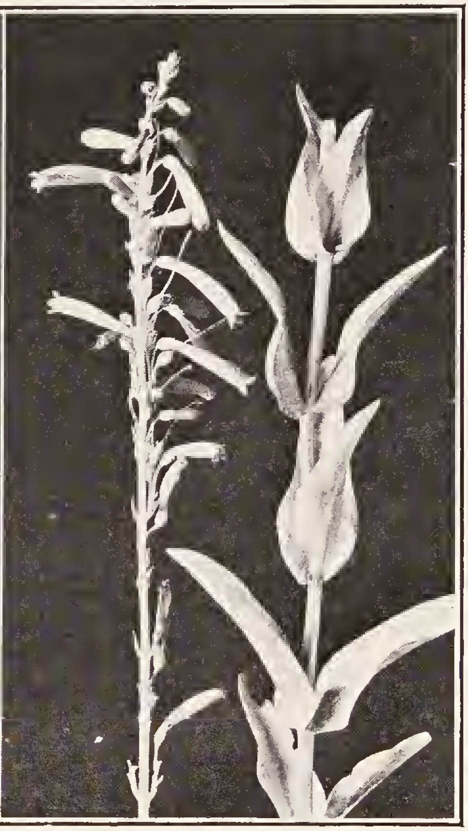


73. Scarlet Paintbrush *(Castilleia foliosa)*.
74. Golden-Yarrow *(Eriophyllum confertiflorum)*.

although I'm thinking its flowers are pretty large horns for a hummingbird to "wind," even if one were inclined to try it. Hummingbirds do patronize the flowers very liberally, however, for the nectar they contain. The bright-red flowers are especially interesting for their structure, because the calyx forms the long tube of the trumpet and furnishes a large share of the spread of color, being bright-hued and extending well up to the margin of the bell. The short petals are borne on the calyx, their tips extending but little beyond those of the calyx. One's first impression on seeing the flower is that it has a double row of petals. As a chaparral shrub, the California fuchsia is of almost infinitesimal importance; but it is entitled to an advanced position in the decorative list. Its name of "fuchsia" is given on account of its pendant habit, but is misleading, as it belongs to the Evening Primrose Family.

There are several of the pentstemons which deserve some mention, both for their service as part of the protecting cover for the ground and for the decorative effect which they give to the landscape. In a previous chapter I have already mentioned one of these, the honeysuckle pentstemon *(P. cordifolius)* (Fig. 40). While none of its sisters approaches this one in size, yet two of them are real shrubs, and the others at least suffrutescent. The real shrubby ones

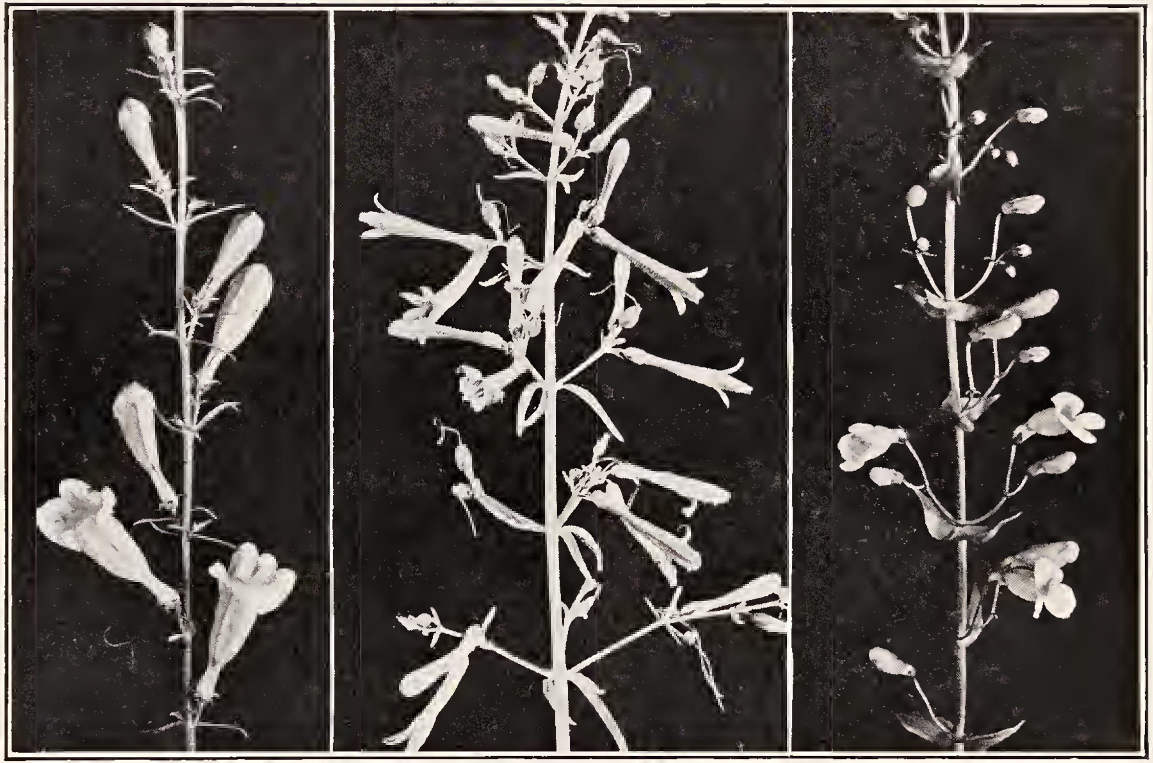




75. Bushy-Beardtongue *(Pentstemon antirrhinoides)*: The only Yellow Pentstemon of the Elfin-Forest.
76. Scarlet-Bugler *(Pentstemon centranthifolius)*: One of the Most Brilliantly-Colored of all California Flowers.

are *P. antirrhinoides* (Fig. 75), a yellow one of the Santa Ana Mountains and southward; and a cardinal-hued one *(P. ternatus)* (Fig. 78), of the San Gabriel and San Bernardino Mountains. Of those which are suffrutescent only, there is the scarlet-bugler *(P. centranthifolius)* (Fig. 76), most brilliant of all our scarlet flowers; violet-beard-tongue *(P. heterophyllus)* (Fig. 77); *"P. spectabilis"* (Fig. 79), which is also violet, with blue lips, and which is also often called "beard-tongue"; *"P. palmeri,"* a pinkish-white one from the upper parts of the mountains; and *"P. labrosus," a* scarlet one of low stature, known as "rabbit's ears," of the San Bernardino and San Jacinto Mountains. Each of these is distinctive and deserving of more extended remarks than there is space here to give.

In this survey of the "lesser shrubs of the chaparral" no pretense is made of having completely covered the field. It would be a tedious task, and of little profit, to try to do so, as there are many plants of this order which are of scarcely any service as protecting cover, and at the same time are neither decorative, nor of use in other ways.



77. Violet-Beardtongue *(P. heterophyllus)*: The Most Variable of all the Pentstemons.
78. Scarlet-Pentstemon *(P. ternatus)*: A Bright-red Shrubby Pentstemon Plentiful in the Upper Part of the Chaparral-Belt.
79. Purple-Pentstemon *(P. spectabilis)*: Often Called "Blue-Lips."

VII

GIANT TREES OF THE ELFIN-FOREST

THE Elfin-Forest covers practically all of Southern California, with the exception of the two desert areas, Mojave and the Colorado. Other possible exceptions to this broad statement may be found in the region of the Sierra Madre Range lying south of Antelope Valley—as the western end of the Mojave Desert is called—and in the upper part of the San Rafael, the San Bernardino and the San Jacinto Mountains, where the higher altitude is so sustained that the coniferous forests spread over areas of considerable extent, and where "pine flats" and wooded slopes alternate with stretches of chaparral; and also in very limited and widely scattered areas on the mountains still further to the southward. Everywhere else the chaparral marshals its forces in close array for league after league, broken only by an occasional valley, some short, deep cañon, or a "potrero" of a few square miles in extent where the wild oats tenaciously hold on and maintain undisputed sway.

In this extensive empire of the chaparral, there are many spots where one may stand and look out over an unbroken sea of brush in every direction until the horizon shuts out the view. Gazing at the wide-spread scene, one forgets that it is a forest of dwarfs in which the horizon hides itself, so perfectly does the elfin-wood cover the face of the land! Bald, bare rock ridges may stand up here and there; but if they are in the near foreground, they look like islands in the ocean; and if in the distance, they merge imperceptibly into the general landscape. A range of mountains may thrust itself upward in a long sierra, with one side a steep, black precipice, and the other a more gentle, wooded slope, while on the crest-line stands a straggling regiment of pines, mingled perhaps with fir and cedar. But these ragged Sierras are always far enough away so that all distracting details are lost, and they seem to fit snugly and harmoniously into the ocean of chamise, ceanothus, manzanita and other dwarfs of the chaparral.

It is only when on one of these high points of vantage that a person gets a true conception of the immensity of the Elfin-Forest. Here and there trails lead up to these high spots, and in some places run for miles along the culminating ridge of a lofty range. But the way to these lofty stations is far, and the trail often steep. So it happens that those who journey to the high vantage ground are few. The great mass of people—even of those who live within the limits of the Elfin-Forest itself—have no just idea of the composition and wonderful extent of the Kingdom of the Chaparral, because they have never been where the sky alone was its limiting boundary.

But the higher places of the nearer ranges offer viewpoints where you may get a one-sided survey running up to the summits of the loftier ranges beyond, and where you may look out over many square leagues of elfin-wood. The trails which lead thither are numerous, and while no two are just alike, yet they group themselves into two general classes: cañon-trails and ridge-trails. The former are more nearly like one another, because there is little opportunity for deviation from the courses cut out by the streams; the latter are more diversified, now following one ridge for a while, then swinging around the head of some gulch for another ridge, and again zigzagging up the face of a long, steep slope.

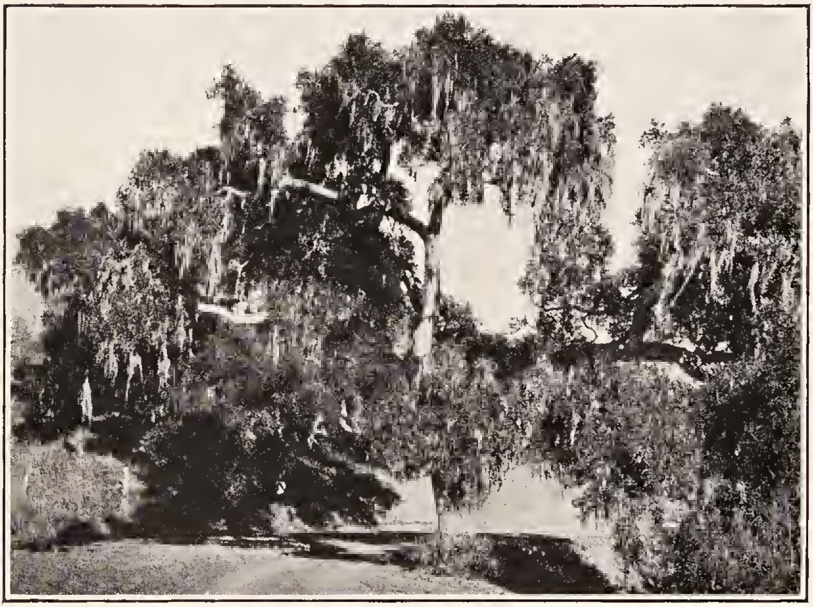
More frequently than otherwise the path of the ridge-trail has been cut through thickets of chamise, ceanothus, or other chaparral; and they who pass along can easily see that, although the brushwood is elfin in stature, it has been a man's job to win a way through it. It is along these trails that one may get a close and intimate acquaintanceship with the various sorts of the elfin-trees which make up the chaparral.

To a limited extent, automobile highways now follow ideal ridge-trail courses. Such a one is the "Ridge Route," which connects the San Joaquin Valley with the South. But even the north end of this road is a cañon-route. From the ridge section of the route there is a wide expanse of the chaparral to be seen on either hand, yet both towards the east and the west higher ridges soon limit the field of view.

On the east the limiting ridge is only some five or six miles away; and on the west but two or three times that—a comparatively limited view, when we think that the length of the Elfin-Forest runs to 500 miles, or more! On the summit of both of these limiting ridges stand fringes of giant cone-bearing trees—around to which I am going to get by and by—clearly outlined against the sky. Those toward the east stand out sharp and clear, on account of their nearness, and also because there is but a thin fringe of them, the range not rising high enough to support a real forest. Toward the west the skyline forest fringe is heavy and, because of its distance, shows but little detail. The mountains there rise up to altitudes ranging from 7,000 to 9,000 feet and support real forests of cedar, fir and pine. It is from the culminating peaks of these mountains that some of the most extensive views in all the Elfin-Forest are to be had.

Before we climb to the "higher parts," to meet there the "cedar, fir and pine," let us take a survey of the larger trees of the lower valleys, working from them into the cañons and on up to the high mountain forms.

The valleys which lie within the limits of the Elfin-Forest have their characteristic trees. These are mainly of two oaks, *Quercus agrifolia* (Figs. 80 and 81), and *Q. lobata* (Fig. 82). The first of these is the well-known "California live-oak," or "Coast live-oak," as it is often called; and the other is the "Valley-



80. California Live-Oak *(Quercus agrifolia)*; Often Called "Coast Live-Oak"; The "Encino" of the Spanish. This specimen stands on Hope Ranch, near Santa Barbara, where all the oaks are heavily draped with "Spanish-Moss."

oak," or "White-oak," as it is more generally known. These two are probably the best known of all California trees; and the California live-oak is, without doubt, the most admired. To *Quercus agrifolia* the Spanish gave the name of "Encino," and it seems to have been their favorite of all the trees. The ranches which had an abundance of these oaks were the most highly prized and, wherever it was possible, haciendas were located in a grove of the much-loved encinos. Later comers have exhibited the same partiality as did the Castilians, and today the price of a place often mounts in proportion to the number of fine old live-oaks it possesses. A single live-oak often enhances the value of a lot 25 per cent over an adjoining and equally sightly, but treeless one. This California live-oak is a lover of the sea breeze, and it is at its best in the coast valleys and on the off-shore islands.

The valley oak is a tree of the inland valleys, where it often grows to the thickness of six or seven feet, and with a spread of one hundred! Its leaves are lobed and deciduous, and its bark is a light grey. These features, together with its regularly branched form, give it a decided resemblance to the white-oak of the eastern forests; so there is little wonder that it is almost universally called white-oak. "Valley-oak" is a more distinctive name, however, and I have noticed that most native Californians use it.

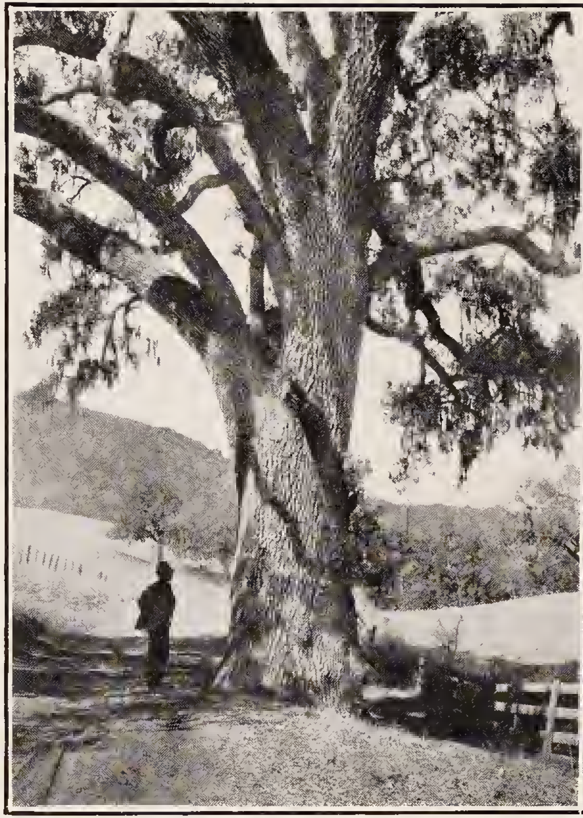
81. An "Encino" in the San Fernando Valley, with a Spread One Hundred Feet in Diameter.

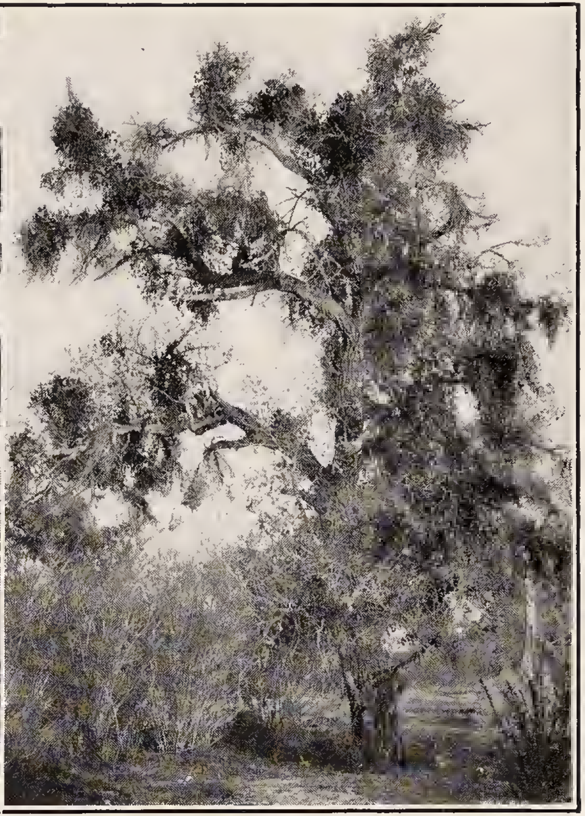
The valley-oak is the one which the Spanish called "roble," and which they found so plentiful where the old "Camino Real" passed over the mountains in the northern part of San Luis Obispo County that they called the place "Paso de Robles"—pass of the oaks. These oaks are patrician in their tastes. Where they take possession of a valley they try to do so to the exclusion of almost every other sort of tree. There is one, however, which they seem to be quite willing should associate with them. And strange as it may appear, this one is a pine—the thinly-attired, gray-robed "Digger." The valley-oaks never form a close, continuous forest, but stand scattered about over the floor of the valleys in loose, open formation. To one looking down upon a valley of this sort, the oak-set floor has the appearance of an irregularly-planted orchard. Many of these valleys have been sown to wheat for half a century or more without ever an oak being removed, unless it were broken down or uprooted by a windstorm.

In some of the high valleys of the Coast Ranges the "robles" are frequently caught by the frost when they are leafing out in the spring. Yet they do not seem to be discouraged to any great extent on that account. A few years ago I was passing through Cuddy Valley, in the north end of Ventura County. It was almost the first of June and the oaks were just putting forth their leaves. I was surprised at their lateness, but an examination showed that it was the second crop, the first crop having apparently been killed by the frost some weeks before. This was at an altitude of about 5,000 feet. I learned from a vaquero on a near-by cattle ranch that it was no unusual thing for the oaks to have their first leaves frost-bitten. Yet the trees looked thrifty and prosperous. I noticed, also, that the chaparral surrounding the valley showed no ill effects from the frost. Through long years of acclimatization, both the oaks and the chaparral had become inured to the vicissitudes of the region in which their lot was cast.

The valley-oaks belong to the central and northern parts of the Elfin-Forest. Near Los Angeles is their last outpost towards the south and east.

"Tehachepi" is said to mean in the Indian tongue "The Land of the Big Oaks." And it may well be, for in the passes of the range that

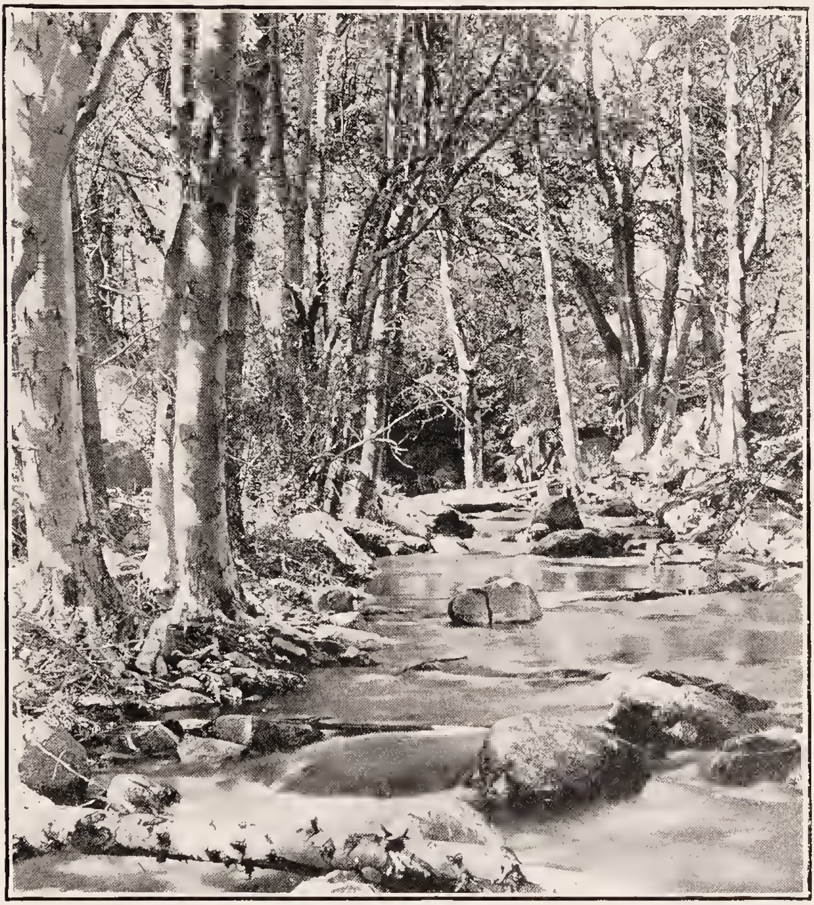




82. An Eight-Foot Valley-Oak *(Q. Lobata)*: Also Called "White-Oak": The "Roble" of the Spanish.
83. Fremont-Cottonwood *(Populus fremontii)*: Infested with Mistletoe.

bears this name, lying between the Mojave Desert and the San Joaquin Valley, stand thousands of these great valley-oaks, some of them veritable giants. What is said to have been the greatest one of its kind stood until recently a few miles from the station at Tehachepi. I had heard of this tree, and had hoped that some time I might have the pleasure of standing beneath its great spread of branches and of walking around and reverently caressing its massive trunk—one of the greatest of its kind, and which probably was well started on its life career before Cabrillo sailed up the California Coast nearly 400 years ago. But it has never been convenient for me to visit this tree—and I was in no hurry, thinking it would still be there long after my time. And now I never will have the opportunity, for it has "passed into history"—not that its natural course was run, but because man wanted the ground which it occupied for some purpose of his own.

That was a mighty oak, surely, and great must have been its fall. But others are still standing which closely approach it in size. I know of one such. It stands in the Santa Ynez Valley in Santa Barbara County and is still apparently in its youth, although undoubtedly hundreds of years old.

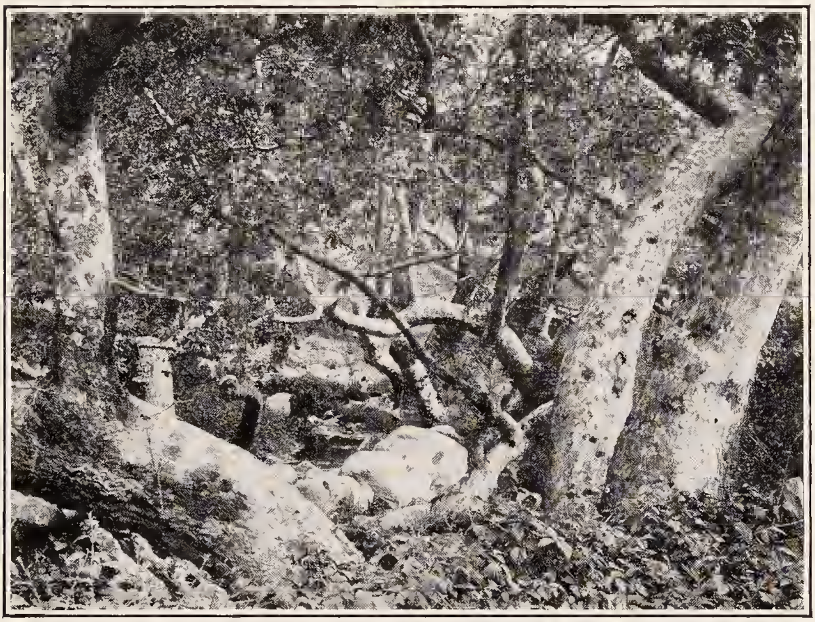


84. An Alder-Bordered Creek: Photo by H. F. Van Winkle.

When the trail follows up some deep cañon, the wayfarer for a time will find his path shaded by trees of ample size. Oaks at first and sycamores, those twisted, gnarled and warty broad-leaved giants of the south; then alders, bordering the stream almost as regularly as if planted by the hand of man. Maples there may be, too, with leaves half as big as the page of a newspaper; and perhaps some cottonwoods, where slackening grade and widening cañon permit a cienega to form, or where a little flat is built up out of the rock waste washed down from above.

The sycamores (Fig. 85) are pre-eminently the lower-cañon and foothill-wash trees of the Elfin-Forest. There seems to be an understanding between them and the alders. The two seem to apportion the course of the stream between themselves, the sycamores taking the lower reaches and the alders the middle sections—both leaving the upper parts to the maples and bay trees.

The sycamores are the unconventional and independent ones of Mother Nature's tree family. They have no mode nor rule of growth which they must follow, except that each must shape itself as utterly different from every other one in the neighborhood—or any other neighborhood—as its ingenuity can devise. So they stand up and lie down; they twist and turn; they circle and angle. If there is any one feature which they are especially inclined to copy, it is that of lying down. Yet sometimes we see one growing straight and tall with all the dignity of a pine. And again, once in a



85. Sycamores *(Platanus racemosa)*: In Sycamore Cañon, near Santa Barbara.

great while, we find one with a wide spread of branches, regularly distributed. I remember seeing one such near Santa Ana a few years ago, the spread of whose branches was nearly 100 feet wide.

Although the sycamores mostly seek the washes and the lower parts of the cañons, yet we may find them occasionally away off by themselves in quite unexpected places—such as on a flat far up in a cañon, or by some spring out on the slope of the mountain.

"Sycamore Cañons" are more plentiful in Southern California than those of any other name, although "Aliso Cañons" run them a close second. (Aliso is Spanish for *alder;* so we should expect an "aliso-cañon" to be one in which alders abound. But as a matter of fact, in California the term has been very generally applied to those having an abundance of sycamores. Likewise, *alisal*, which literally means an extensive grove of alders, more generally indicates an extensive growth of sycamores. The Spanish for *sycamore,* however, is *sycamoro.*)

There is much more about the sycamores

that I should like to say—for they are a never-failing source of interest and revelation to me—but other trees claim space and I must leave them. So then, only this one thing more:

Our California sycamore *(Platanus racemosa)* is commonly called "sycamore," while the sycamore of the East *(P. occidentalis)* is usually called "buttonwood." While the two are distinct species, yet their resemblance to each other is so close that the Easterner unconsciously accepts the California tree as his old friend—a little surprised, perhaps, at the unconventional attitude it assumes.

Our alders *(Alnus rhombifolia)* (Fig. 84), are the "Beau Brummels" of our California trees—trim, sleek, manicured as it were, and always dressed for company! They "go the pace," too: live fast and die early! But for all that, they "do their stunt" in Mother Nature's scheme of mountain conservation. They live close by the streams, often where the running water laps their roots; they hold the rocky soil in place—often actually pinning the rocks down and holding them there—and prevent a vast amount of erosion; they shade the cañon floor and hold back evaporation. Yes, they are decidedly a factor in the welfare of our land! And that they are trim, natty, all "dolled up" as it were for company, let us also count to their credit; for are they not a distinct joy to the tramper-on-the-trail when he has come from far on a hot day and his canteen is empty? Yea, verily, for he knows that where the alders are, there also may water be found!

The common cottonwood of the Elfin-Forest is *Populus Fremontii* (Fig. 83)—named for the Pathfinder, and usually spoken of as the "Fremont-cottonwood." While it may be met with along the lower courses of the streams anywhere in the land of the chaparral, it may be said to be plentiful only in the wide valleys of a few of the rivers which empty into the Pacific and those flowing to the deserts—notably the San Luis Rey and San Diego rivers on the Coast, and the Mojave River in the desert. The trees along the Mojave River in the vicinity of Victorville are sadly infested with mistletoe. Many of them are so covered with the parasitic plant as to appear in full foliage in midwinter, when all their own leaves have been shed; and many of them have even been killed.

The Black-Cottonwood also makes its home in the south, but is found rather sparingly—usually along the upper courses of the larger streams. It is a larger tree than the Fremont cottonwood, sometimes reaching three feet in diameter and 100 feet in height. It is sometimes called "balsam cottonwood," because of its fragrant balsamic buds. Its botanical name is *Populus trichocarpa.*

86. Giant Black-Willows *(Salix nigra)*: In Northern Ventura County.

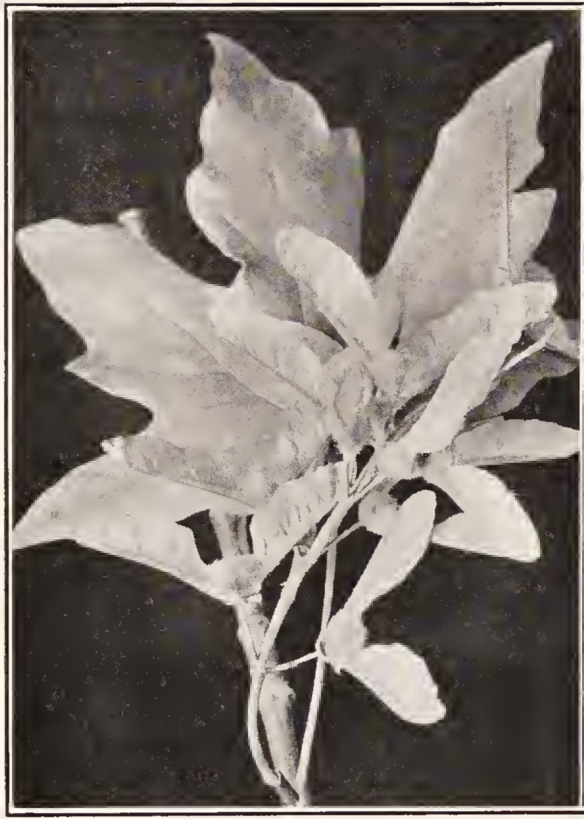
I note that Edmund Jaeger, in his little book on "The Mountain Trees of Southern California," mentions another cottonwood *(P. angustifolia)* as occurring along the upper Santa Ana River; and also the quaking aspen *(P. tremuloides)* as growing in a single spot north of Mt. San Gorgonio.

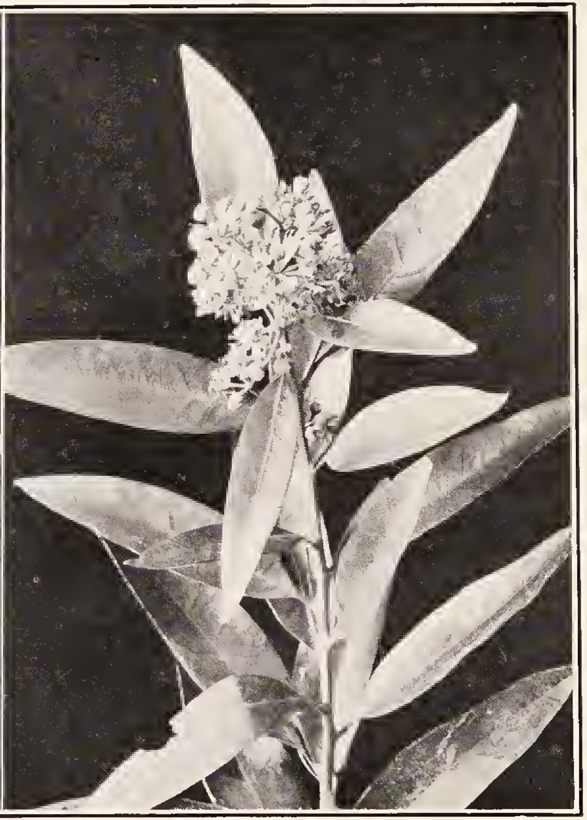
There are several willows which grow along the water courses in the Elfin-Forest—for the most part on the flood plains and sandbars of the larger streams. Two of these are of real tree-size, *Salix nigra* (Fig. 86), and *S. Lasiandra.* They are both commonly called "black willow" from their general dark appearance. The former is the largest of all American willows. I once camped among a group of them along the Cuyama River, in the northern part of Ventura County, several of which were fully four feet through!

It is when you are traveling a cañon trail that you "meet up" with the shiny leaved baytrees *(Umbellularia californica)* (Fig. 88). You may hear them called "California-laurel," or "Oregon-myrtle," or any other one of some half-dozen names, among which is that of "wild-olive." This latter name comes from the fruit they bear—which, however, is olive-like only in shape. This fruit is a favorite food of the frisky gray squirrels who make their homes in the cañons, but it seems to have no other use, although it is said to have been used by the aborigines when other supplies of food ran short.

In Southern California the bay-tree is mostly slender and sapling-like, even at maturity, although in exceptionally favorable locations it may grow to giant-stature. I know one which stands at the southern foot of the San Marcos Pass, not far from Goleta in Santa Barbara county, that is three feet in diameter and seventy-five feet tall. It is said to be the largest of its kind.

The bay-tree is one of the first acquaintances which a newcomer makes when he begins to travel the cañon trails of the Elfin-Forest, for he is not likely to go very far before he brushes against the oil-charged, pungent leaves, and has his olfactory nerves assailed by a bayrum odor; and it is so alluring that he must needs stop and investigate. And he





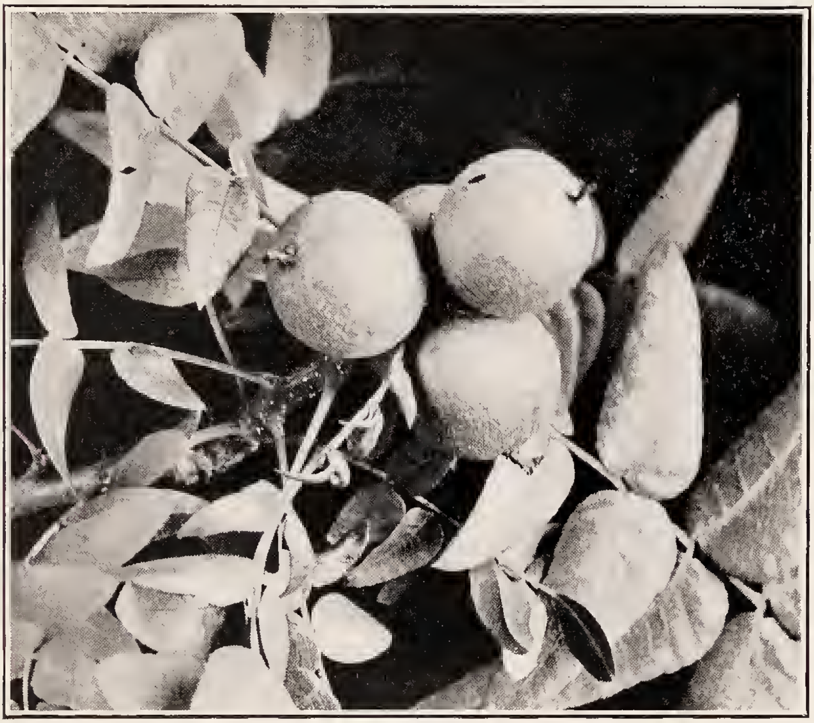
87. Broad-Leaved Maple (*Acer macrophyllum*).
88. Leaves and Flowers of the Bay-Tree (*Umbellularia californica*).

usually investigates to his ultimate sorrow. When he finds where the odor comes from, he crushes some of the leaves between his thumb and fingers, and takes a good, strong whiff of the agreeable perfume. Pleased with the result, and not knowing of the "keep-coming" quality of the odor, he takes another whiff—a longer and stronger one. By this time the odor has really begun to "arrive." It keeps on coming and coming in an increasing geometrical ratio, until the victim feels as if his olfactory system were being torn out by the roots. The sensation of pleasure which was at first realized turns to one of acute agony, and the unfortunate sufferer feels as if he would never come out of the ordeal alive. He does, however, but it usually takes some little time. Strange to say, one lesson doesn't seem to be enough to teach most persons just how far they may toy with the bay-tree leaves in safety. There is a certain fascination in trying to find out how far one may go toward the danger line without touching it. I have repeatedly suffered myself because of venturing too far. The odor is popularly supposed to be a good headache cure, but I have yet to see any convincing proof of its efficacy. On the other hand, I have known it to breed a head-splitter that lasted all day.

The Broad-Leaved Maple *(Acer macrophyllum)* (Fig. 87) makes its home very generally in the cañons of the Elfin-Forest; but it is never of sufficient size to be of much use commercially. It is a decided ornament, however, and often adds materially to the forest-cover. While it is not the equal of its Eastern cousin for autumn colors, yet its red and yellow tints are doubly welcome in a land where bright-colored foliage is somewhat scarce. About its only rivals among the trees in this respect are the cottonwoods; and among the shrubs, the poison-oak. It is pre-eminently a cañon-loving tree, seeming to flourish best where it is shaded for at least part of the day.

The wild native walnut (Fig. 89) is very nearly coextensive with the Elfin-Forest in its range. It is usually known as "California-Walnut," or as "Mexican-Walnut." The latter name seems to be quite generally used, but hardly with any justice, as the tree is almost—

if not entirely—confined to California. It is a tree of the foothills, only seldom being found high up on the mountains. Nearly all of the foothills of the San Gabriel Valley are generously set with them, most of them being not much larger than good-sized shrubs. The tree is never very large, but under exceptionally favorable conditions may reach a height of



89. Mexican Black-Walnut *(Juglans californica)*.

thirty-five or forty feet and a thickness of eighteen or twenty inches. Both tree and nut are miniature editions of the Eastern Black-Walnut. The wood has the same color and is of very much the same quality, but the trees are seldom large enough to furnish saw-timber. The kernel of the nut has the same flavor, too; but on account of the small size of the nut and the extreme thickness of the shell, there is very little of it. On account of their location on the foothills, the walnut trees are often killed by fire; but the roots nearly always survive and promptly send up a crop of shoots.

The California-Elderberry *(Sambucus coerulea)* (Fig. 90) is of real tree-stature, often attaining a height of twenty or twenty-five feet and a diameter of eight or ten inches. I have seen specimens as much as a foot in diameter. It grows almost anywhere up to an altitude of five or six thousand feet. In the wide lower valleys it matures very few berries, but in the moist cañons the crop is often so heavy that the branches break under the weight. And the rich purplish-black berries there are exceedingly juicy. Persons with the elderberry taste in their mouths soon find out where the fruit grows most abundantly and make annual pilgrimages for it in the late summer to satisfy their longings. Mill Creek and other places of the San Bernardino Mountains are among the especially-favored spots of the South.

90. Elderberry *(Sambucus coerulea)*

VIII

THE NEEDLE-LEAF TREES

THE needle-leaf trees of the chaparral country are confined to the upper parts of the cañons, the summits of the mountain ranges, and the north slopes for some little distance down from the top. The first one of them that we meet with as we climb upward through the cañons is the Big-Cone Spruce *(Pseudotsuga macrocarpa)* (Figs. 91 and 93), a very near relative of the famous Douglas-spruce of the north. In fact, for a long time it was considered only a variety of the northern species, and even at the present time some botanists will not acknowledge that it is entirely distinct. As the generic name indicates (*pseudo*—false), it is not a true spruce. In structure it is as near a fir as it is a spruce. The northern tree is more frequently called "Douglas Fir" than "Douglas Spruce." But our southern tree seems never to be called anything else than a spruce, to which "big-cone" is attached, because its cone is unusually big for a spruce—and very much larger than that of the giant northern tree.

We are quite apt to meet with the big-cone spruce by the time we have reached an altitude of 2,000 feet. At first there will be a single tree or two; then a straggling group of a half-dozen or so; then a steadily increasing number, until we find the head of the cañon filled with

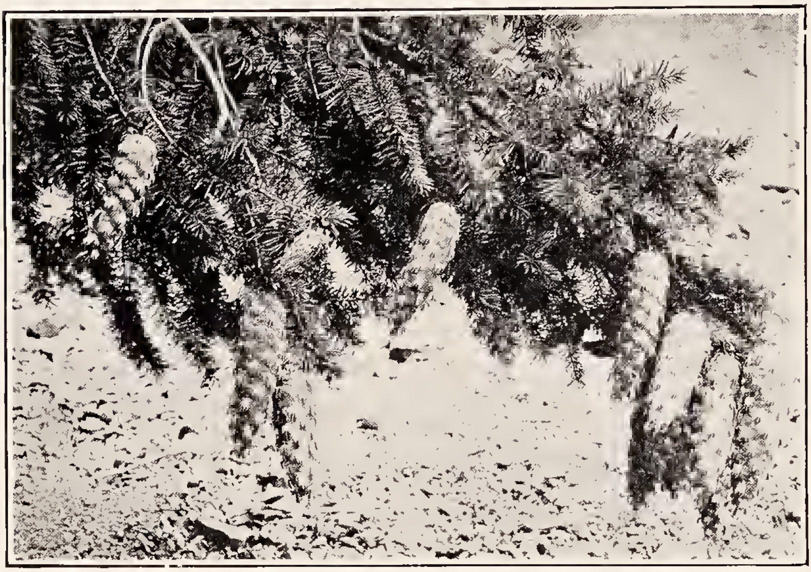
91. Trail Through Forest of Big-Cone Spruce.
92. An Old Coulter-Pine *(Pinus coulteri)*: In Typical Location.

them. They are shaggy-barked fellows with somber foliage, and usually with limbs beginning only a short distance from the ground. Frequently where the trail passes beneath them, the limbs have to be cut away to make a passage. From one of the ridges which hem in such a spruce-filled cañon, the group of dark evergreens shows up strongly against the side of the mountain. If the cañon is on the north side of the mountain, the effect is so intensified that from some distance away the grove of spruce makes a veritable black patch in the landscape.

The big-cone spruce is distinctive in shape, its upper limbs standing straight out from the trunk, which gives to the top a flat, table-like effect, simulating in a measure the form of old sugar-pines. But as sugar-pines only occur at altitudes entirely above the range of the big-cone spruce, there is no occasion for mistaking the one for the other—even from a distance; and of course a close inspection of any tree in question should always reveal its identity.

The big-cone spruce is confined exclusively to the chaparral belt. And, although it has a wider distribution in the region than any other cone-bearer, yet so well within the limits of the Elfin-Forest is its range, that when you discover one you may know you are far inside the boundaries which limit the region of dwarf trees. Because of the low altitude at which it grows, it is usually closely surrounded with chaparral, and therefore more frequently subject to fire than any other of the cone-bearers of the region. One of the most common sights in the cañons of old fire-swept areas is that of the blackened trunks of the spruces. It is of very little value for lumber, but for its service as forest-cover it should be protected to the utmost — especially as there seems to be no other needle-leaf tree which does so well at the same altitude.

When we leave the spruce-embowered cañon and climb upward by way of some ridge, we soon come to the big-cone pines *(Pinus coulteri)* (Figs. 92 and 94). They are apt to be few and scattering, and usually have chosen the rockiest and most barren places for a home. Full-grown trees are from fifty to sixty feet tall and a couple of feet in diameter, although occasionally they may be larger. The older trees have clear trunks for fifteen or twenty feet, with a rough, dark-brown bark, above which bent and broken branches make an irregular crown. Young trees are more regular in shape and may have branches from the ground. And it must be a very young tree, indeed, which does not have at least a pair of the enormous cones. The cones are truly gigantic, frequently reaching twelve or thirteen

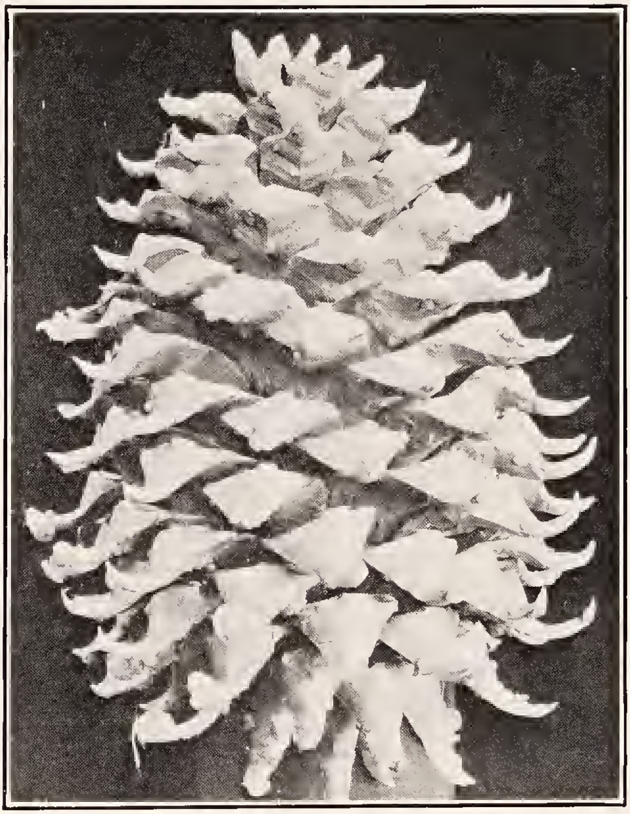


93. Cones of the Big-Cone Spruce *(Pseudotsuga macrocarpa)*.

inches in length and six or eight inches in diameter. When mature, and before the scales open, a large one will weigh five or six pounds. Every scale is armed with a heavy, sharp, claw-like spine, which makes it difficult to handle a cone with bare hands. The cones are also very heavily charged with resin, which is an additional handicap in gathering them.

The Coulter-pine—as the big-cone pine is often called—seems to belong to the Elfin-Forest, like its comrade, the big-cone spruce. It ranges somewhat north of the chaparral country, but extends beyond its boundaries in no other direction. It seems strange that the big-cone species of both pine and spruce should have so nearly the same habitat, and that the region to which they are confined is that of the Elfin-Wood. Yet so it is. And it is of additional interest that the pine whose cones approach most nearly those of the Coulter species in size should also have very much the same geographical range—the "Digger-pine," of which more will be given later.

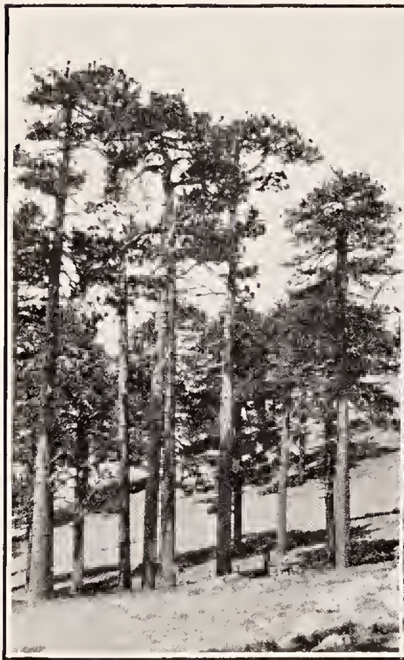
The Coulter-pines are only occasionally numerous enough to make a grove of sufficient extent to merit the name of forest. They more generally scatter themselves about, as if diffident of company, often standing in isolated positions, and not infrequently entirely surrounded by the chaparral. In this way they often extend on up the mountain until they



94. A Coulter-Pine Cone.

meet and mingle with the yellow-pines, which is usually at an elevation of between 4,000 and 5,000 feet. But as a rule they do not mix with the yellow-pines for any great distance where they meet. Under the name of "bull-pine" they are cut for lumber to a considerable extent; but the quality of the lumber is poor, the best of it scarcely ranking as second class.

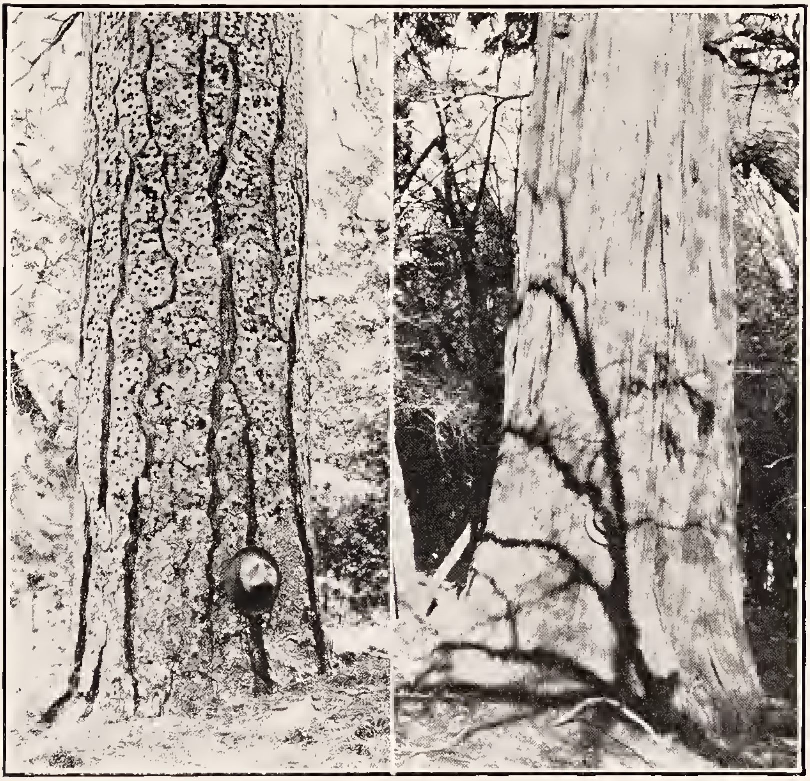
The most important of all the cone-bearers within the confines of the Elfin-Forest is the Western Yellow-Pine *(Pinus ponderosa)* (Figs. 95 and 97). It is of most importance because of its more frequent occurrence in forests of considerable extent, its value as a forest-cover, its fire-resisting capacity, and its excellent lumber quality. Nearly all of the inner Coast Ranges rise high enough for the yellow-pine to thrive. And there, at the top of the range, sometimes intermingled with the sugar-pine and incense-cedar, and in a few places with the white-fir, it forms that long narrow forest-belt which I have already mentioned as fringing the summits of the ranges. Where the top of the range widens out into flats, there are often solid stands of fine, large yellow-pines for two or three miles in width and several miles in length. The trees will have clear trunks for thirty or forty feet and the ground will be covered with a thick mat of needles.



95. Group of Typical Yellow-Pines *(P. ponderosa)*.
96. Typical Jeffrey-Pines *(P. jeffreyi)*.

While the trees do not average as large as those in a similar forest of the Sierra Nevada, yet they furnish fine saw-timber and make a pine woods that is both charming and impressive. They contain much valuable lumber, and that so few tracts have thus far been lumbered is due to their inaccessibility. While they are not as large as those of the north, yet there are among them some veritable giants. I have measured a number which were six feet or over at four feet from the ground, and of an estimated height of considerably over one hundred. I remember two which stood close together on the slopes of Mt. Pinos, one six feet and the other six feet two, whose crowns must have reached to nearly one hundred and fifty, and whose massive boles maintained their thickness with scarcely any diminution for sixty or seventy feet. Their age could not have been less than 300 years, and they may have been husky youngsters when Columbus discovered America. So twin-like and so nearly of a size were they that I wondered if the seeds from which they sprang might not have been cradled in the same cone, or at least had not fluttered from the same tree during the same season so many hundreds of years ago.

The yellow-pines are of two varieties—or species, as some would have it. One is the true western yellow-pine *(P. ponderosa);* the other is the Jeffrey-pine *(P. jeffreyi)* (Fig. 96), as those who make it a separate species would have it. The botanists who regard it as a subspecies write it *Pinus ponderosa-jeffreyi.* Between the typical western yellow-pine and



97. Trunk of Yellow-Pine. Note the large plates into which the bark is broken. The "Peppery" appearance is due to holes made by woodpeckers for storing acorns.

98. Trunk of an Eight-Foot Incense-Cedar.

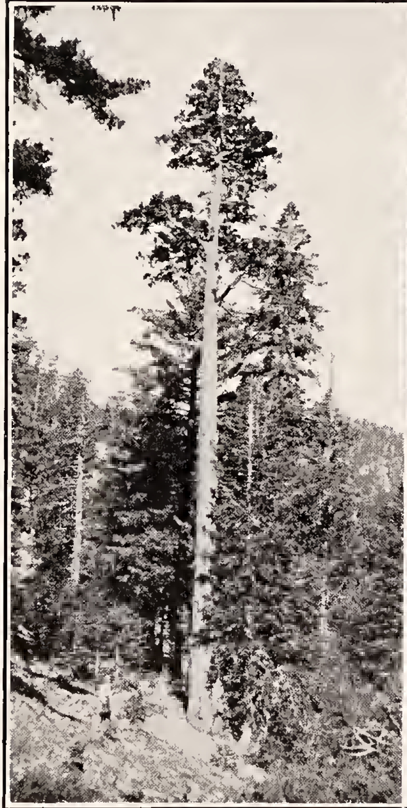
the pronounced type of the Jeffrey-pine—such as is found on the eastern slope of the Sierra Nevada, for instance—there is such a wide difference that no one could fail to notice it. But on the other hand, there are yellow-pines a plenty whose characteristics are so nearly midway between the two that not even an expert can tell to which group they belong. In general, the Jeffrey-pine is a tree of higher altitudes. That is, its most distinctive type is found toward the upper limit of the range of the yellow-pine, while the distinctive type of the western yellow-pine occurs toward the lower limit. Roughly speaking, midway of the range the two types merge. The Jeffrey-pine is the smaller, on the average, too, and less widely branched; the bark is darker and more broken; and the cones are usually very much larger. This last feature is very marked in the Jeffrey-pines on the east slopes of the Sierra Nevada, where I have seen its cones of a size rivaling those of the sugar-pines. The bark of a mature western yellow-pine is red and usually broken into broad plates, while the limbs are more widely spread, and the top more rounded, than that of the typical Jeffrey-pine.

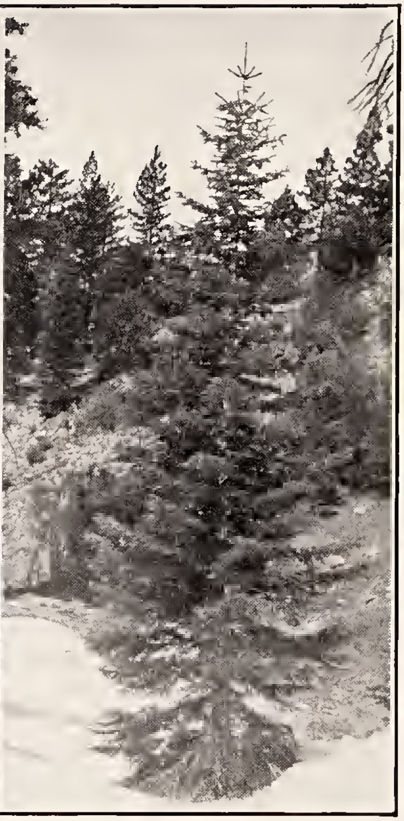
But the yellow-pine is not the only giant of these mountain-top forests of the land of the chaparral. It predominates in numbers, but in size the sugar-pine *(Pinus lambertiana)* (Fig. 99), is easily its equal. But it is only on

99. Top of an Old Sugar-Pine *(P. lambertiana)*. Note the great weight of cones.

some of the higher mountains that the sugar-pine makes its home, and there it seems to thrive best a little way below the top on the north slope. In such situations we may find smooth-barked, clean-trunked fellows of five or six feet in thickness and 150 feet in height. Their great cones—the largest of the pine tribe, unless we except those of the Coulter pine—are from ten to eighteen inches long. They are beautifully proportioned, and hang like huge pendants from the extreme ends of the outer branches, where they swing gracefully with every passing breeze. They usually hang so far above the ground that the only way of getting a specimen is to shoot it off—unless one happens to find a gray squirrel at work, when sometimes fine cones may be had for merely picking them up, after they have come thundering down from seventy-five or a hundred feet above, where the squirrel has cut them off. I know of a place in the San Rafael Range, however, where there are some old sugar-pines that are so storm-beaten and snow-broken they scarcely have any trunks, and their crowns spread out close to the ground. There, on the outer ends of the branches, I have seen the long pendant cones resting their tip-ends on the earth. What a paradise for the gray squirrels, who think sugar-pine nuts the finest ever!

The incense-cedar *(Libocedrus decurrens)* (Figs. 98 and 100) is found almost everywhere



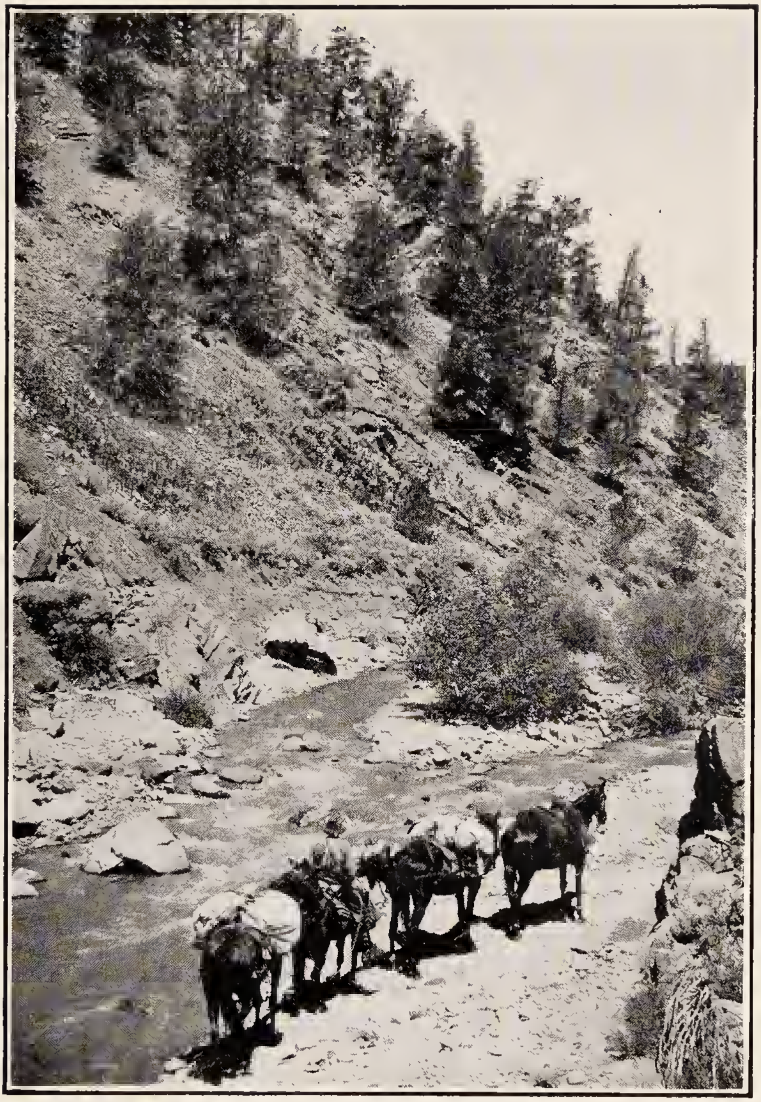


100. A Fine Specimen of Incense-Cedar *(Libocedrus decurrens)*.
101. A Young White-Fir *(Abies concolor)*.

the yellow-pine abounds in the south, and is more plentiful than the sugar-pine; yet I have never gotten over being surprised when I come across one of these trees on the southern mountains. To me, they have a northern look, and time and time again, when I have come upon some spot where they stood in force, I have felt as if I had been transported to the Sierra Nevada Range, or to the Cascades. I have noticed, too, that they seem to affect other persons in the same way. With their fast-tapering trunk, cinnamon-brown, shreddy, and deeply-furrowed bark, and cedar-like foliage, they have such a distinctive look, even when mingled with other evergreens, that very few persons pass them by unnoticed. In size they hold their own with any of the pines. The cone is ridiculously small for so large a tree, consisting of only half a dozen scales; and but two of these bear seeds.

The white-fir *(Abies concolor)* (Fig. 101) is another tree of the north which consents to grace the "high line" forest of the south with its presence. In its younger years it is my favorite of all the cone-bearing trees; for then its ashen-white trunk is beautifully clean and trim, its shape so perfectly symmetrical, and its branches and needles so regularly arranged, that it seems to lack nothing which might win it favor. The lower branches stand straight out from the trunk; then those above shorten in regular order and gradually slant upward, until the whole is a beautiful, sharp-pointed cone! Even after the tree has reached the height of fifty or sixty feet and the trunk has trimmed itself of its lower limbs, often the top is still a pattern of symmetry. But the old trees become rugged and scraggly and lose much of the trim beauty of their youth. They often grow to be giants of five or six feet in diameter. The foliage of the white-fir is fragrant. With "pine-needle-loving" persons it takes the place of the balsam-fir of the East. And its branches furnish by far the best material to be found anywhere in the western forests for making a camp bed.

I have interrupted my discussion of the various pines of the Elfin-Forest in order that I might take up the incense-cedar and white-fir, because the latter two are so intimately asso-



102. Piñon-Pines *(P. monophylla)*: In Lockwood Cañon, Ventura County.

ciated with the yellow-pine and the sugar-pine that it seemed wise not to separate them here. I shall now take up the other pines, of which there are several.

On the slopes of the mountains along the inner rim of the Elfin-Forest—that is, where it borders on the San Joaquin and Antelope Valleys and the Mojave and Colorado deserts—there grows a pine which has several claims to distinction. This is *Pinus monophylla* (Fig. 102) — literally "single-leaf pine" — as the botanists call it, because each leaf has a sheath unto itself. Throughout the Southwest, however, it is generally known as "Piñon" or "nut-pine." Its needles are short and round —not angular as in the other pines—and awl-pointed, so that the foliage takes on a spruce-like appearance which is very deceptive. The cones, although they are quite small themselves, bear seeds of such size as to be worth while as nuts. These nuts are a great delicacy with the Indians; and in times past were even a substantial means of subsistence. Although the nuts are still gathered in large quantities by the Indians, a considerable portion of the crop is exchanged for civilized products. The nuts now even find their way into the eastern markets. Like all the other pines, the piñon is not a steady producer, often going for a season or two without a crop.

103. Digger-Pines *(P. sabiniana)*: In the Liebre Mountains, Los Angeles County.

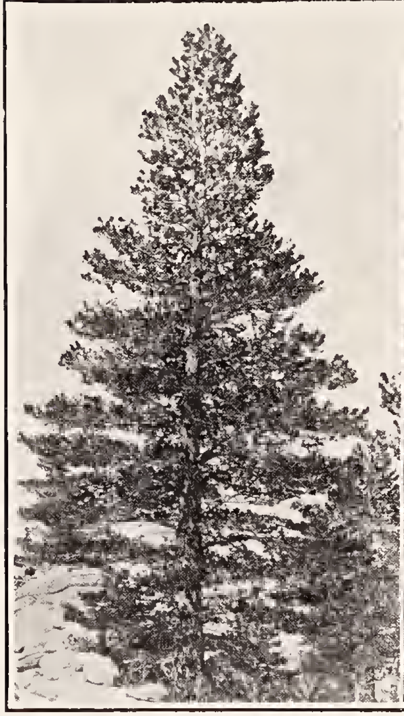
The piñon-pine is a small tree, seldom more than thirty or forty feet in height, often not exceeding fifteen or twenty. It is light of foliage, and whether it occurs singly, or in solid array along the mountain side it blends wonderfully well with the surrounding sea of chaparral. It is very plentiful along the upper part of the Victorville road to Big Bear Lake, on Piñon Flat between Mt. San Jacinto and the Santa Rosa Mountains, and almost everywhere in the Tehachepi Mountains.

The Digger-pine *(Pinus sabiniana)* (Fig. 103) also furnishes edible nuts. Its common name comes from the fact of its always having been an important source of food for the California Indians in the central parts of the State, who from earliest times have been called "Diggers." It is found in the Tehachepi Mountains, in the Coast Ranges to the west and north, and sparingly to the east and south, and also in the chaparral belt of the foothills of the Sierra Nevada. In appearance the digger-pine is as unlike the piñon as the valley-oak is unlike a scrub-oak. Its tall, slender form, with from two or three to a dozen forks, and thin, gray foliage, make it the easiest of all pines to be recognized. Its identity is certain as far as it can be seen. Its cones are very large, approaching those of the Coulter-pine in size.

And, like those of the Coulter, every scale is armed with a strong, sharp hook, while the whole cone is smeared over with a liberal supply of resin. The cones hang on for two or three years after ripening and also retain most of their nuts for a season or two—the kernels keeping their original sweetness.

In habitat, the digger-pine courts the company of the broad-leaved trees and the chaparral, rather than that of pines and other cone-bearers. It is often solitary, standing by itself in some open cañon, or even away out in the center of a valley, surrounded by a field of wheat. The Ridge Route passes through a region of them in the vicinity of Sandbergs, at the west end of Antelope Valley.

Of the other pines which are found within the limits of the Elfin-Forest, there are two that grow only at very high altitudes—roughly 8,000 feet or higher. These are the lodgepole-pine *(Pinus contorta-murrayana)* (Figs. 104 and 106), and the limber-pine *(P. flexilis).* The areas which they occupy are comparatively small and are almost exclusively confined to the Sierra Madre, San Bernardino and San Jacinto Mountains. The lodgepole-pine of the south is quite a different looking tree from what it is in the north—Montana and Idaho—where it gets its distinctive and expressive name. Anyone who has been accustomed to seeing the dense stands of tall, slender lodgepoles in the Northern Rockies does not at once



104. A Typical Southern Lodgepole-Pine *(P. murrayana)*: Often Called "Tamarack-Pine": From Mt. San Jacinto.

105. Western-Juniper *(Juniperus occidentalis)*: Big Bear Lake, San Bernardino Mountains.

recognize these squat, tapering-trunked trees of the south, with limbs beginning at the ground, as belonging to the same species. Yet they are one and the same. The resemblance of the foliage to that of the tamarack is quite striking, and throughout the California range of the tree it is more frequently called Tamarack-pine than anything else. Many persons know it simply as "tamarack," but of course this is an improper use of the term. The needles occur two in a bundle, and from this fact it is sometimes called the "two-leaf pine," which is entirely proper and certainly distinctive.

Around Mt. San Gorgonio, at an altitude of from 8,000 to 10,000 feet, there is a forest of considerable extent of lodgepole-pines, mingled with which are a few limber-pines. There is also a solid stand of the lodgepoles around Bluff Lake in the San Bernardino Mountains, and scattered stands elsewhere in the same range. At Round Valley on Mt. San Jacinto, also, there is a well-set forest of lodgepoles, along with a few of the limber-pines. The latter are always much less plentiful wherever they occur together. The limber-pine has five leaves in a bundle, and is classed with the white-pines. The lodgepole is classed with the yellow-pine group.

The knob-cone pine *(P. attenuata)* and the prickle-cone pine *(P. muricata)* are found sparingly within the limits of the Elfin-Forest. The former is a sea-loving species, and is most at home in the mountains of the Central California coast and on the adjacent islands. A

106. Lodgepole-Pine Forest: San Bernardino Mountains.

small grove, however, is located along City Creek in the San Bernardino Mountains. This pine never sheds its cones naturally, the great majority of them being gradually surrounded and covered by the growth of the tree.

The prickle-cone pine is more of a northern tree, but it invades the chaparral in the Coast Ranges as far south as San Luis Obispo County.

Still two other pines are sparingly represented in the Elfin-Forest, the Parry-pine *(P. quadrifolia)* and the Torrey-pine *(P. torreyana)*. These both have seeds of edible size and quality. The former is often called the four-leaf pine. It is found sparingly along the eastern border of San Diego County, but is more plentiful southward into Mexico. The Torrey-pine occurs only in one limited area on the Coast between Del Mar and La Jolla, and on Santa Rosa Island off the Santa Barbara coast. Both the four-leaf and Torrey-pines are classed with the white-pines.

The junipers have two representatives in the territory of the Elfin-Forest, the western *(Juniperus occidentalis)* (Fig. 105), and the

California *(J. californica)* (Fig. 107). The former is of limited occurrence and dwells only at high altitudes. There is an unusually extensive stand of it at Big Bear Lake, many of the trees being exceptionally large and fine. The California juniper is rather widely distributed at medium altitudes, but its stand is

107. California-Juniper *(J. californica)*: An Unusually Large, Fine Specimen.

usually scattering. Single trees are often found by themselves, miles away from any of their fellows. It is usually so much dwarfed in stature as to be almost lost among the other shrubs where it mingles with the chaparral, as it often does.

IX

THE MOUNTAINS

ELSEWHERE I have written: "The mountains of the Elfin-Forest hold within themselves the life and prosperity of Southern California. Without their sky-piercing summits to force the moisture from the clouds, the region would receive but a very small part of the rainfall it needs; without their extensive and conserving reservoirs, the precipitation that comes during the rainy months could not be held in reserve for use during the dry season; without the cañons and streams to center the drainage and bring the life-saving fluid within the reach of man, the valley soil would lie idle and vacant, and the Sunny Land of the South would be nothing but a barren waste." What is contained in these words comes to me more forcibly every time I look out on the ranges which form such a large part of the Land of the Chaparral.

It is always a matter of great surprise to newcomers from the Prairie States that the mountains of California are so extensive and the valleys so comparatively small. A friend who recently came on a visit to the Southwest for the first time said to me:—

"Why, California is nothing but mountains! I don't see where there is land enough to furnish garden patches, let alone farms and orchards. Where is all the stuff raised, anyway?"

That is the general impression of those who come from mountainless sections, and also to some extent of those whose homes have been among the Eastern mountains. And it takes time and observation to overcome this first impression. Only years of residence will effectually teach one that a lesser expanse of mountains and a wider extent of valleys would be a positive calamity. When finally a realization of the true situation comes, it is seen that the great problem of the region is not that of finding more land to cultivate, but of getting sufficient water for the land already at hand; that were the mountains fewer and the valleys greater, there would be more arid stretches, and fewer orchards and alfalfa patches.

Nature balances her forces, and nowhere else in the world has she made a nicer adjustment than in Southern California; nowhere else has she used such extremes of precipitation and drought, such jumbles of mountains and paucity of valleys, such eccentric rivers, and such forests of elfin trees; and yet with all these diverse materials she has produced a land in which trees, vines, grains and fruits from the four corners of the earth flourish as if they were in the land of their birth. To her children of the tropics only does Nature deny the boon of a home in Southern California—and even to many of them she grants the privilege of changing constitution and character enough to dwell in certain selected spots of the much-favored land.

The general name of "South Coast Ranges" includes most of the mountains within the Elfin-Forest. Local names for minor groups are too numerous and not of sufficient importance to be recorded here; but there are certain groups that are of such consequence as to merit specific mention.

The Santa Cruz Mountains are at the northern end of the chaparral belt. They only partially submit to the domination of the elfinwood, giving over a goodly portion of their domain to the lordly redwood. Southward, comes next the Santa Lucia Range, extending through the great counties of Monterey and San Luis Obispo, and including such minor groups as the Santa Margarita and San Luis Obispo Mountains. Here the chaparral comes into its own, and thence eastward and southward for 500 miles holds undisputed sway. I say eastward, for at Point Concepcion the coast line turns eastward, which direction it largely holds until it passes beyond the southern boundary of our country. And the trend of the mountain ranges conforms to the direction of the coast line.

East of Point Concepcion for 300 miles is the heart of the Elfin-Forest. Here, too, the Coast Ranges broaden out to their widest extent, and from here they steadily climb to greater heights, until they culminate in the three giant peaks of the Southland—San Antonio, San Jacinto and San Gorgonio.

In Santa Barbara and Ventura counties the Coast Ranges attain their widest extent of mountainous country, unbroken by valley or upland plain. While not quite so Alpine as the region to the southeast, yet the Coast Ranges there attain their widest extent with ridges, peaks and cañons. Nevertheless, the group is rather definitely divided into three sub-ranges. Closely bordering the sea is the Santa Ynez Range, rising to almost a mile above tide,

108. A High Mountain-Park in the San Rafael Mountains.

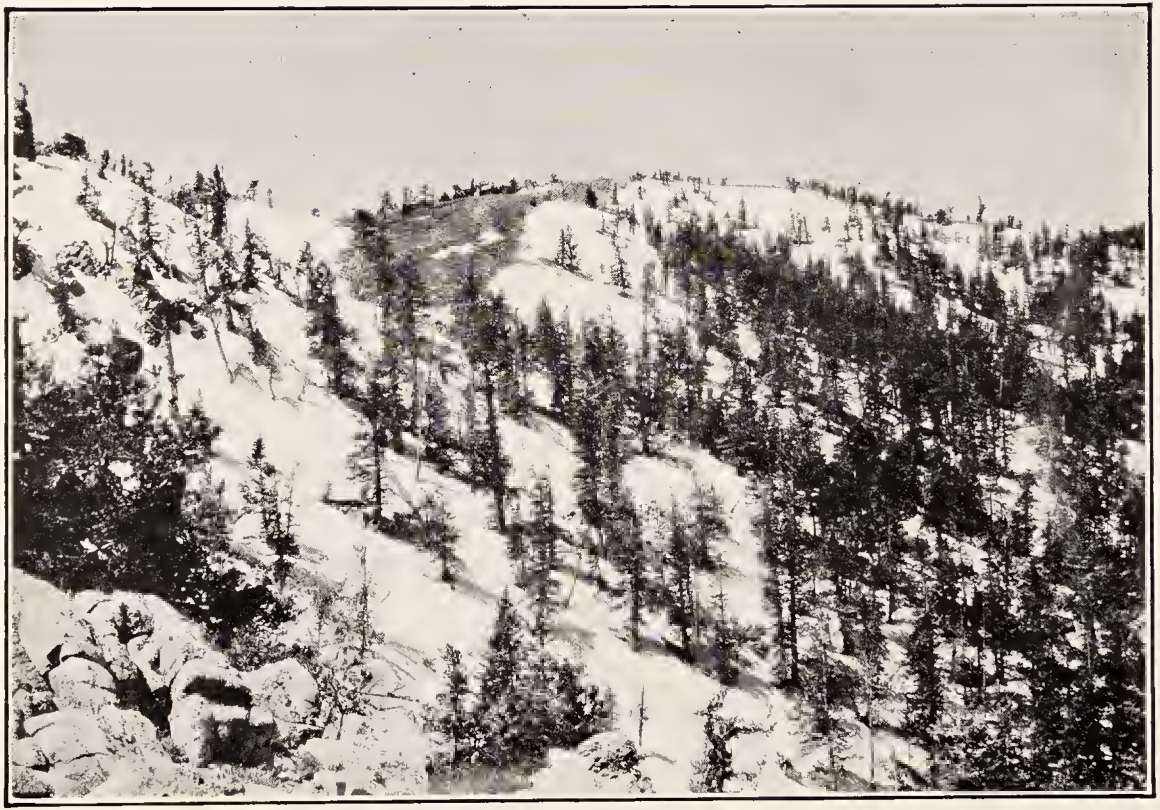
and with a ridge like the comb of a steep-roofed house. It is solidly clothed in chaparral, with but a few pines scattered here and there along its wind-swept ridge. At its foot on the north flows the Santa Ynez River in a narrow, tortuous gorge. Beyond rises the San Rafael Range, the most inaccessible and least visited of all our southern mountains—and therefore the range which has again and again called me to its fastnesses. It rises half as high again as the Santa Ynez, from whose summit it presents a maze of ridges, cañons and precipices. This magnificent panorama shows at its best from the ridge of the Santa Ynez just back of Santa Barbara, and anyone who can spare the day's time which it takes to reach this vantage spot will get as his toll a picture stamped so indelibly upon his memory that he will carry it to the end of his life.

The ridge of the San Rafael Range is crowned with a sky-line fringe of pines and other cone-bearers, but everywhere else, excepting on a few potreros, and where the precipices are too steep, the Elfin-Forest runs on and on. For the most part, the potreros are covered with wild oats, and from May on through the summer are bright golden patches set in the sea of dark chaparral. Toward its eastern end the San Rafael Range seems to have turned the potreros over to the amsinckias, gilias, lupines and other wild flower folk, who marshal their forces there by the millions. At the north foot of the range flows the Sisquoc, one of the main branches of the Santa Maria River. Then comes another range, which the government topographers have put down on their maps as

109. On the Summit of Mt. Pinos: Photo by H. F. Van Winkle.

the "Sierra Madre del Sur," and which may therefore be considered as the western extension of the Sierra Madre Range that includes the San Gabriel and San Bernardino Mountains. Then comes the Cuyama River, and beyond that lies the western spur of the Tehachepi Mountains which border the great inland valley of San Joaquin on the south.

The San Rafael Range and the various spurs at its eastern end by which it merges with the Sierra Madre furnish many outstanding peaks and ridges that are locally known as "pines." The most western one of them is called "Mission Pine," so named because it is generally credited with having furnished the timbers for the Santa Barbara Mission a century ago. Whether or not this be true, there is evidence on the mountain itself to show that timbers were taken away at a remote past date. The crest and north slope are now wooded with yellow-pines, sugar-pines, incense-cedars and white-firs. A few Coulter-pines are scattered over the lower south slope, while the cañons are sprinkled with big-cone spruces. Piñon-pines have been reported from the saddle at the



110. The North Side of Mt. Pinos in June.

eastern end of Mission Pine, which is the most western locality for the species so far as now known.

Near the top of Mission Pine Mountain at an altitude of about 6,000 feet and just low enough to get the drainage of the sandstone crest, is a perennial spring. It is situated in a little basin set with yellow and sugar-pines, and is carpeted with grass and flowers. As a camping place the spot is one of the finest I know of in all this great world. Yet the persons who have ever "pitched their tents" in this ideal place are few in number, for it is two days distant by horse from the nearest highway, and the trail which leads there is only such in name.

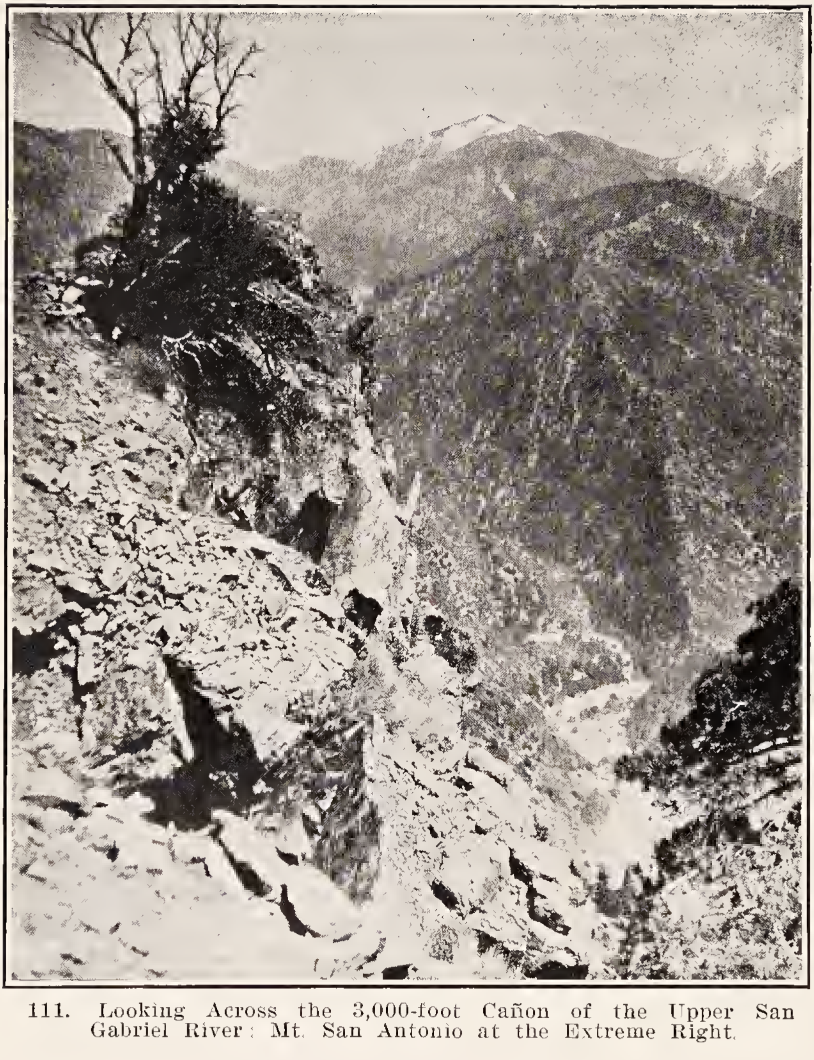
Some fifteen or twenty miles eastward comes Big Pine, then Medulce Pine—counterparts both of Mission Pine, but always to me lacking something of its glamour; then Pine Mountain and the Ventura Pines. This brings us to Alamo Mountain, where the San Rafael Range may be said to terminate. It is a fascinating group of mountains. To anyone wishing an outing in a little-visited real mountain region, I recommend the San Rafael in the month of May. Besides solitude and grandeur of mountain scenery, he will find floral displays of resplendent beauty, and will have the opportunity of camping along the two finest trout streams in Southern California, the Sespe and the Sisquoc.

Twenty miles northwest of Pine Mountain is Mt. Pinos, the dominating mountain of the region, with an altitude of 8,826 feet—the highest peak in the Coast Ranges north and west of Mt. San Antonio. On its crest and slopes is one of the most extensive areas of pine forest in Southern California. On account of its altitude, Mt. Pinos receives a heavy precipitation, and on its summit and north slope the snow lies until late in June, and sometimes well into July. It rises directly from the San Joaquin Valley, upon which in the summer time one looks down as upon a sea of haze, and across which in the far distance to the northward the white crest of the Sierra Nevada stretches for 200 miles. Two of us passed over the crest of Mt. Pinos on the last day of May, a few years ago, and for most of eight or ten miles traveled on snow. One night we camped at the old sawmill, at an altitude of about 7,500 feet, and in the morning found the snow about our camp frozen hard, and the little stream close by, that the evening before had been a respectable brook, reduced to a trickling rill.

About twenty miles east of Mt. Pinos stands Frazier Mountain, not so high by a thousand feet or so, but on which the Forest Service maintains one of its lookouts, which fact is evidence that it overlooks a wide expanse of chaparral country.

Another twenty miles, south from Frazier Mountain, and we come to Alamo Mountain, altitude 7,371 feet, on whose summit is a little basin set with beautiful yellow-pines and watered by perennial springs—another of those delightful camp spots which are to be found only in the "high places." From the top of the bare rocks on the east scarp of the summit there is an extensive view of the mountains of the Southland. Even the Channel Islands opposite Santa Barbara are plainly to be seen.

This region is mostly in northern Ventura



111. Looking Across the 3,000-foot Cañon of the Upper San Gabriel River: Mt. San Antonio at the Extreme Right.

County; with smaller portions in both Los Angeles and Kern counties. It is the very heart of the Elfin-Forest, the mountain ridges and peaks rising like islands in the sea of chaparral.

Eastward the mountains drop to make the gap through which the Southern Pacific Railway finds a passage to the South Coast—although even then it requires a long tunnel to do so. East of this break—Soledad Canyon and Newhall Pass—the mountains rise again. For nearly 100 miles they trend due eastward, with Mojave Desert on the north, and on the south a valley broken with hills and minor ridges, the western end of which is known as the San Gabriel Valley, and the eastern as the San Bernardino Valley. Toward the eastern end of the San Bernardino Valley the mountains drop again in Cajon Pass, through which the Santa Fe Railway comes into the "Garden Land" from the desert. The range between Newhall Pass and Cajon Pass usually goes under the name of the "San Gabriel Mountains." Mt. San Antonio is the highest peak. In the front line—that is, the south line—of these mountains are Mt. Wilson, Mt. Lowe and Mt. San Gabriel, real dominating mountain peaks, in a way, for they rise a mile above the valley at their feet; yet they are not "in the same class" with the ridges and peaks of the mountains which lie north of them, and between them and the Mojave Desert. Among those higher peaks are Mts. Gleason, Pacifico, Waterman, Islip, Throop and North Baldy.

112. Mt. San Gorgonio from Dry Lake: Looking over a Forest of Lodgepole-Pines.

This whole region, excepting only the higher ridges, is one vast expanse of chaparral.

East of Cajon Pass are the San Bernardino Mountains, whose higher parts are genuinely Alpine, and whose ridge for fifty miles is known as "The Rim of the World." They culminate in Mt. San Gorgonio, highest of Southern California mountains, with an altitude of 11,485 feet. Mt. San Gorgonio is bulky as well as high. It stands at the eastern end of a long ridge of which Mt. San Bernardino is the western sentinel. In winter the climate of the surrounding region is frigidly arctic. Snow falls to a depth of from five to ten feet and remains for several months. On bright winter days the white-mantled form of Mt. San Gorgonio stands out so clear and strong that it is a compelling sight from as far away as the seacoast west of Los Angeles, 100 miles distant.

South of the San Bernardino Mountains is San Gorgonio Pass, through which the "Sunset Route" finds an entrance to the "Orange Empire" from the Colorado Desert. South of this gateway rises Mt. San Jacinto, which is equally interesting with Mt. San Gorgonio, only in a different way. It rises to 10,805 feet. Its western and southern slopes are moderate, and are covered with chaparral well up towards the top. But its opposite face is a sheer precipice which drops to sea-level in the Colorado Desert, presenting an almost perpendicular wall of nearly two miles! Its snowfall is not quite so great as that on Mt. San Gorgonio, yet the gulches on the north side are white until late in the summer. Medicinal springs are numerous on the west and south

113. Snow-Scarp near Summit of Mt. San Jacinto in Midsummer.

slopes, a number of which have been developed into health resorts.

From Mt. San Jacinto the mountains trend southeastward and drop to much lower heights. The range seems to have no general name, although it is more or less continuous all the way down into Mexico, bordering the Colorado Desert. Occasionally there are higher groups which have local names. First of these beyond Mt. San Jacinto are the Santa Rosa Mountains. Others in order, going toward the Mexican boundary, are Hot Springs Mountain, the Cuyamacas and the Laguna Mountains.

There are several minor ranges nearer the ocean, among which are the Santa Monica Mountains in Los Angeles County, the Elsinore group of Orange County, and the Palomars along the northern line of San Diego County. The three groups just mentioned are preeminently mountains of the Elfin-Forest, as they are very nearly solidly covered with chaparral.

This account of the mountains of the Elfin-Forest is too brief to give anything like a complete conception of their magnitude, their extension, and their physical features. No mention has been made of many minor groups and ranges, any one of which contains enough of interest to draw a mountain-lover into its depths, and some of which hold features that are striking and unique. No single map exists—as far as I know—that locates and names anything like all of the mountain groups and ranges. The most satisfactory authority to consult are the government topographic sheets. These are reliable as to topography, but many of the quadrangles are lacking in the matter of names—in which there is even some confusion between the different sheets.

Striking and impressive as the mountains of Southern California are in their physical features, yet the most wonderful and marvelous thing about them is the forest of elfin trees which clothes them as with a garment. To stand on some high vantage point, where I can gaze out over the limitless sea of chaparral is to me a delight; to follow it with my eye, as it runs over ridges and dips down into cañons, then up another ridge and on again, is an inspiration; to see it extend on and on, until it disappears in the horizon or drops behind some distant range, and realize the part it plays in the Creator's plan of Conservation, is an exaltation.

X

THE STREAMS

THE streams which traverse the Land-of-the-Chaparral are as unique as the shrub-like trees that make up the forest-cover.

The ancient joke that California rivers are often fifty feet deep—underground—is only truth. From May until November or December the river-courses are the driest places in all the land. In the foothills they are tempestuous piles of boulders. Following them down into the valleys, we find the boulders grading into cobblestones. Next come gravel beds, which in turn blend with wide stretches of sand that reach to the sea. But beneath it all there is a real river of water. Sometimes it is just under the surface; sometimes five, ten, or twenty feet beneath; maybe fifty feet below; no telling how deep until you go after it. But it is always there, ever flowing outward to the sea.

When the winter storms are on, the surface

California river is not a matter for jest. It is an intense reality, and for hundreds of thousands of people becomes the absorbing question of the hour. It is no longer an underground stream whose existence is a doubtful matter, but a majestic flood, filling its wide courses, overflowing its banks and carrying away a fortune in soil in its onward rush through the fertile valleys. Capricious as a coquette, it changes its course at will. Without apparent excuse, it may leave what seems to be a perfectly good channel and strike across the country for miles, cutting through alfalfa fields, carrying away orange orchards, and burying thousands of acres of fruitful land under a deep deposit of mud, sand and gravel. Where the valley is wide enough, the river may even cut out a new channel all the way to the sea and choose for an outlet some bay that is miles away from its former mouth. Anyone wishing to make the personal acquaintance of such a stream has only to visit the San Gabriel Valley in Los Angeles County. Go first to where it issues from its magnificent cañon near Azusa—where great rock-crushers are clanging away, year in and year out, breaking into small angular fragments for use in concrete work the "nigger-heads" which the accommodating stream has brought down from the mountain fastnesses. Then follow the stream out into the valley and note how time and time again it has changed its channel. A little further along notice how it seems to have hesitated as to which of two courses it should take, and that it has finally decided to be impartial and take

114. At the Beginning of an Elfin-Forest River: Far Up Among the Mountains.

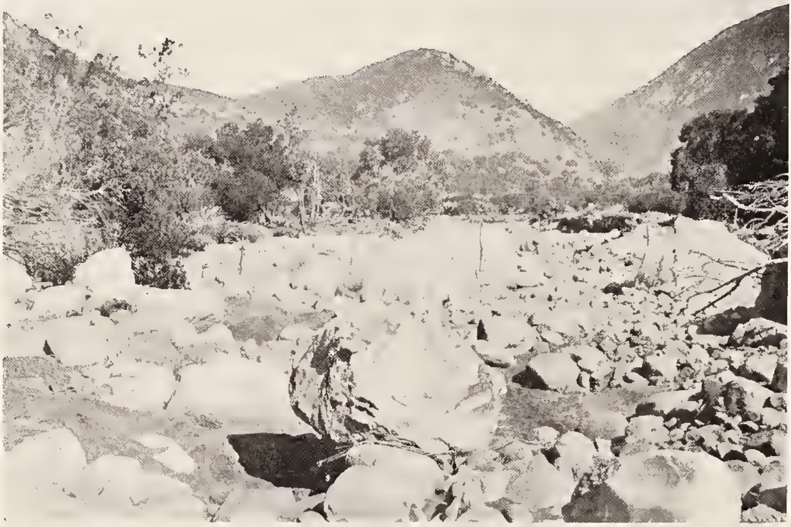
both. Follow one of these two, and the outlet is in Alamitos Bay, several miles east of Long Beach; follow the other, and you come to Wilmington Lagoon, half a dozen miles west of Long Beach. And between these two channels, and on either side, you will find frequent marks of the devastation which the stream has wrought in its "cross-country runs."

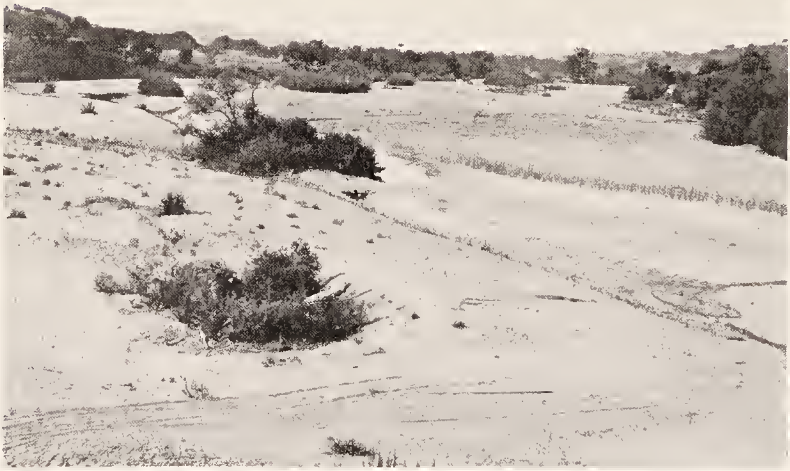
As this is being written, a vast flood-control project is under way in Los Angeles County. Dams are being built in the cañons to catch the storm waters and prevent the rapid run-off, the courses of the rivers through the valleys are being changed so as to direct the currents to the best advantage, and the banks of the streams are being riprapped and otherwise protected from erosion. It begins to look as if the streams in this region will soon be compelled to conduct themselves properly and in a well-behaved manner.

With the ending of the winter rains and the coming on of summer, the shrinking of the rivers is rapid. Within a couple of months there is no longer a continuous flow along the surface. The first break comes in the boulder deposit just without the mouth of the cañon. There, long after the water has disappeared from sight, you can hear it among the rocks beneath. A little later the gravel beds further down the course are dry, but until far into the summer you can reach water within a few feet of the surface. Lastly, the stream drops from sight in the wide stretches of sand and silt that form the valley floor—sometimes sinking so deep as to discourage all digging after it. Before it reaches the sea, however, it is apt to reappear at the surface, for the floors of many of the valleys for miles back from the ocean are only a few feet above tide. Across these wide sand flats bordering the sea the bed of the river is a changeable, evanescent thing. There are no banks to set its boundaries, so that at flood time the stream spreads out at will. In summer there may be one or two ribbons of water an inch or so deep and a rod or two wide lazily meandering according to their own sweet will through the sandy waste. If the stream be one of the larger ones there may be half a dozen such ribbons, which divide and unite and divide again, in intricate, interlacing patterns.

For the most part, the valleys through which the rivers make their way to the sea have been silted up by the streams, until they contain thousands of acres of level and wonderfully fertile land—several of the larger ones tens of thousands of acres each. Such is the valley of the Santa Clara River in Ventura County. This is the famous "lima bean country," where an acre of bare land is worth almost as much as a choice city lot. Land must be wonderfully fertile to be considered so valuable—when devoted to bean culture! The valley of the Santa Ana is another example of the kind.

It is in these seaward valleys, too, that many of the best walnut orchards are situated. Until very recent years these orchards were not irrigated; the trees thrive well on "subirrigated" land—that is, land where the drainage is such that the ground water remains near enough the surface for the roots of the plants or trees to reach it. The seaward valleys afford an ideal condition of this kind for walnut culture. The fog-moistened atmosphere which prevails near the sea seems also to be beneficial to the walnut crop.





115. Where an Elfin-Forest River Issues from Its Cañon.
116. The Course of an Elfin-Forest River on the Wide Sandy Flats near the Sea.

However barren of water the surface channels of the rivers through the valleys may be during summer and fall, the streams in the mountains nearly always have a good supply. During the rainy season the mountains receive a much larger precipitation than the adjacent valleys and thus a large supply is laid up for summer use. The heavier the cover of chaparral, the greater the amount of precipitation which is kept from running away until the mountains are able to store it. Much of the precipitation, too, is in the form of snow, and this gives the mountains additional opportunity to absorb it when the melting takes place. So in a season of normal rainfall the mountain streams are sure of a steady supply throughout the dry summer and fall.

The sources of the mountain streams often are so high up that is seems to an observer there surely is no ample reservoir at a higher level to keep them supplied for any considerable length of time. And some do fail ere the summer is gone, but many hold out until the winter rains come again, and not a few of them seem to be flowing about as strongly then as when the dry season started in, some six or eight months before. Around these "high-line" springs are the ideal camping-places for late summer and fall. They are situated in the belt of cone-bearing trees which fringes the ridges of the higher mountains, and the camps may be located under great yellow-pines, or among incense-cedars, white-firs and giant sugar-pines.

Around the springs where the high mountain streams have their sources, and along the downward courses for a mile or two, certain flowers and shrubs of the north make their home. And because these more nearly resemble eastern forms than do the plants from the dry lower levels, they look more "like home" to persons recently from the East than anything else they come across in the Elfin-Forest. Also, some plants which are distinctly southern grow more luxuriantly about these springs than elsewhere. Ferns with a vernal greenness the whole summer through border the narrow water-courses and dip the tips of their long curving fronds into the pools which lie at the foot of innumerable little waterfalls. Everything around has an air of softness that is in striking contrast with the dry, open slopes below, or even with the best which the cañons lower down can afford. Even the overhanging bushes lack the harshness of the shrubs of the chaparral.

To name all the streams of the Elfin-Forest would be an almost endless task; but the rivers and creeks which are the main arteries in the drainage system are not so many but that they may be given in a brief list. Beginning at the north, in the Coast Ranges not far south of San Francisco, the principal streams of the chaparral country are: Sur River, Carmel River, Salinas River, Santa Maria River, Santa Ynez River, Ventura River, Santa Clara River, Malibu Creek, Los Angeles River, San Gabriel River, Santa Ana River, Santa Marguerita River, San Luis Rey River, San Ysobel Creek, San Diego River, Sweetwater River, Cottonwood Creek.

These streams all empty into the Pacific Ocean. With their tributaries, they drain perhaps more than 90 per cent of the chaparral area. Of these, the Salinas, Santa Clara, San

Gabriel and Santa Ana Rivers are of the first magnitude, while the Santa Maria, Santa Ynez, Los Angeles, San Luis Rey and San Diego rivers are very close up to them in importance.

Beside those given in the list, and not tributary to them, there are numerous short creeks on the seaward slope of the ranges which closely border the sea. Also, there are many streams which flow into and lose themselves in the Mojave and Colorado deserts. Most of the latter are small, but at least one, the Mojave River,

117. The Santa Ana River on a Rampage: At the Time of the January Floods, 1916. (Photo by Harry E. Scott.)

ranks with the largest of the seaward flowing streams. The Mojave River gathers its water on the wide northern slope of the San Bernardino Mountains, and during the spring and early summer months carries a stream which for more than a hundred miles after issuing from the mountains is too wide and deep to be forded. But the fate of this stream is to finally dwindle away and lose itself in the desert.

In the Whitewater River, the Colorado Desert has a counterpart of the Mojave River, only on a much smaller scale. The Whitewater rises in the San Bernardino Mountains also, but on the southern side. Only for a short time in the early spring, when the snow on the mountains is melting rapidly, or just after a torrential storm, does it carry a considerable body of water. But it occasionally becomes one of the wildest, most raging and uncontrollable streams in California, leaving its banks, spreading out over the desert wastes, cutting gulches that are miniature cañons, and carrying everything before it.

XI

WHERE MEN LIVE IN THE ELFIN-FOREST

PRACTICALLY all of Southern California may be said to lie within the limits of the Elfin-Forest, so in a certain sense the million and a half people who constitute the population of that portion of the State may all be considered as dwellers in the Kingdom of the Chaparral. With comparatively few exceptions, the homes of these people are in the valleys which lie between the chaparral-covered ranges. And yet in all this vast region there are very few homes from which the chaparral-covered foothills or mountain slopes are not within sight. Even from within the populous city of Los Angeles, or at the beach towns, the "eternal mountains," with slopes clothed in scrub-oak, ceanothus, chamise, and manzanita, are ever in sight.

Although so many people thus daily look upon the Elfin-Forest, yet very few of them are at all familiar with what it contains. Many of them have never trod a single trail which leads into its confines; and of those who have, only a few know and are able to call by name the different shrubs which border the way and cover the mountain for league after league. In fact, there is such a general ignorance concerning the chaparral that many think the name belongs to some particular kind of bush. Time and time again I have heard a questioner ask to be shown a specimen of chaparral! And I have often found it exceedingly hard for one of these honest inquirers to grasp the idea that *chaparral* means a forest-cover of elfin-wood.

Many of the finest orange groves, apple orchards and fruit ranches of various other kinds are on land which has been wrested from the borders of the chaparral. In most of these cases, to the men who cleared and leveled the land, the chaparral was just so much brush that cumbered the ground. As a species of forest-cover, designed by nature for the conservation of the land, it had no more meaning to them than had the hardwood forests of Ohio and Indiana to the pioneers who denuded that

118. An Old-Time Homestead High up Among the San Bernardino Mountains.
119. "Perished Hopes": A Reverted Homestead in the Angeles National Forest.

region a century and more ago. Fortunately, however, what the makers of the orange groves and fruit ranches have been able to wrest from the chaparral can well be spared; and because the elfin-wood is mostly on steep mountain-sides, all that ever can be taken possession of for cultivation will be but an infinitesimal part of the whole. Yet if they were not restrained by our government, there are many persons who would destroy the forest-cover of the mountains where the land cannot possibly be made use of—the forest-cover that goes so far toward insuring the prosperity of the valleys wherein the wealth of the region comes to fruitage.

When the Land of the Chaparral came into possession of the United States, all of the valley and lower foothill land was already held in private ownership; so there was very little unoccupied ground that was worth homesteading. Yet men searched out every spot in the mountains that was level enough to hold a house and make a garden, and located there a homestead. Sometimes it was a little basin of an acre or two; sometimes a small flat on the mountainside; or maybe only a slope of gentler grade and smoother surface. Almost any place would do if only there were a spring near at hand and a level spot big enough to hold an eight-by-ten cabin. Often, after proving up his claim, the owner deserted it for the more alluring comforts of the old-settled portions of the region.

When the Forest Service was organized in the closing years of the last century, and practically all of the unoccupied land in the mountainous regions of the West was placed in forest reserves, an effort was made to get back into government ownership the deserted homesteads which were scattered so promiscuously about within the limits of the regions set aside. Because the "script" given in exchange was good for a like number of acres wherever the owner could find unoccupied land, and there was still some valuable open timber-land in the north upon which they could file, the owners of most of these chaparral homesteads in the southern mountains fell over one another in their haste to make a trade with the government. Most of the old homesteads returned to the Public Domain in this way have been allowed to revert to nature. So it happens that in traversing the National Forests of the Chaparral Belt we often come across ruined cabins and abandoned clearings — the "perished hopes" of former years. Sometimes a few fruit trees remain; figs, if the altitude is low enough, and perhaps orange or apricot; higher up, apple or pear. A few of the better homesteads thus acquired by the Forest Service are being used as ranger stations.

But not all of the old mountain homesteads within the bounds of the Elfin-Forest were traded back to the government. Some of them were considered by their owners as having greater value than any other land which they were likely to get in return. A few were of real worth for ranches of one sort and another, while others were developed into pleasure resorts. Nearly all that were thus retained are still so held. Not a few of them are so far back in the wilds that no wagon road has ever reached them. The trail is their highway; and pack animals are their passenger, express and freight trains. Farm machinery, household furniture, and supplies of all kinds are packed in. Heavy farm wagons, grain drills and mowing machines are to be seen on these back-mountain ranches, all of which have been transported thither on the backs of mules or other pack animals. Even pianos have been taken into the heart of the mountains in the same way. To some extent, the products of the ranches are packed out, as in one instance that I know of, where several hundred boxes of ap-

120. A Back-Mountain Ranch: Reached only by Twenty Miles of Trail: The Lathrop Ranch, Ventura County.

ples and other fruits are taken out every year, the distance to a highway being about twenty miles. The history of the homesteading and development of this particular ranch is interesting enough to warrant the telling of it here.

Caught in one of the land booms which surged over Southern California about a generation ago, and utterly impoverished when the boom went flat, a man, who was then near 40 years of age, loaded a prospector's outfit onto a burro and took to the mountains. A season's prospecting brought him no paying mine, but it did give him a wide knowledge of these southern mountains. One day late in the season, he was high up on the south slope of one of the inner ranges. Looking across the cañon which lay between where he was standing and the next range toward the south, he saw well up on the slope facing him a green basin. Although he was some eight or ten miles away in an air-line, yet he could see that the basin must have an abundant supply of water, for late as it was in the season, it looked like an oasis in a desert, set as it was in a wide sea of brown and rusty chaparral. Right then and there he resolved to quit the prospector's game and become a rancher. He cut a trail to the basin, filed his claim, built a cabin, cleared away the surrounding chaparral, and planted fruit trees. He moved his family there from the city, and for more than a third of a century that mountain basin has been his home. For years no trails came near it, except those which he himself built. The nearest wagon road is still nearly twenty miles away. Yet he has made there a more comfortable home, and developed a more prosperous ranch than many you might find with the same natural advantages, and which at the same time have always been within easy reach of highways and markets.

The snow does not fall so deep within this secluded basin itself, but that the occupants of the home may get about the premises at all times. But during midwinter there are often weeks at a time when the trails leading to the outside world are blocked by several feet of snow; and then the mountain home finds itself shut in.

One special evidence of the energy of this mountain ranch owner is a sawmill. It is quite a small affair, to be sure; but it was built for his own use, and not for general commercial purposes. He wanted lumber for building, and also needed it for boxes in order that he might get his fruit to market in good condition. Spruce and pine grew on the mountain just above the basin, ready at hand for the saw; so he packed in the necessary machinery and built the mill. There were numerous springs about the upper margin of the basin, but the total flow of water was a little scant for turning the wheel that runs the mill. But he was equal to the emergency; he built a reservoir, and by this means was enabled to get a flow large enough to run the mill for several hours at a stretch.

The fruit raised on this mountain ranch is of extra fine quality, and when it has been got to market finds eager purchasers at fancy prices. It has been the principal means of the family's support and the ranch's development, although as a "side-line" the ranch is run as a sort of mountain resort. There are accommodations for a number of guests, and during the summer and fall months a few of the more

121. A Burro Freight-Train on the Trail.
122. Taking a Piano over a Mountain Trail. (Photo by Lloyd B. Austin.)

hardy mountain-seekers find their way to this retreat among the back ranges. It seems probable that in the near future a highway will be built across the mountains which will pass but a few miles away from the ranch. If this road should materialize, this Elfin-Forest home will doubtless be transformed into a full-fledged mountain resort, and will have a large patronage and great popularity. But for me it will then have lost its attractiveness, and I shall sigh for the time when it took a long day's tramp or a rough ride to reach it.

Hidden away among the foothills and in the mountain cañons, and sometimes perched on the very "ridge-pole" of a range, there are now perhaps a hundred resorts within the limits of the Elfin-Forest in Southern California. A few are on or near the State and county highways, but many are reached only by roads of decided grade and rather unpraiseworthy surface. These resorts are of widely-varying degrees of comfort, from that afforded by a well-ordered hotel to a cabin where you have to help yourself to everything. Many of them have some inducement in the way of mineral springs. Indeed if it were not for the "hot sulphur springs," "mud baths," etc., half of the resorts would not have any excuse for being. In justice, however, it should be said that most of the mineral springs, in which the region so plentifully abounds, are medicinally helpful in disorders of various kinds. Sulphur springs are especially numerous, some of them flowing a stream large enough to supply all the domestic wants of a community of 5,000 or 10,000 people, could it be so used. The water in most of them is hot when it comes from the mountain, the temperature often being too high for immediate use in the bath. These hot springs are responsible for the many "Agua Caliente" cañons and creeks found on the maps of Southern California. Whenever the early Spanish settlers found a hot spring, the name — Agua Caliente, i.e., hot water—was applied to the stream it fed, or to the cañon in which it was situated.

On the flanks of the three giants—San Antonio, San Jacinto and San Gorgonio—which stand in the midst of the land of elfin-trees and lift their heads high above their surrounding fellows, there are resorts which are annually visited by thousands of the Southland people. Some are situated at so high an altitude that they can be only summer camps, the spots they occupy being buried under many feet of snow during the winter months. Others, at lower altitudes are open all the year 'round. Automobile roads lead to nearly all these places, which accounts for the large number of persons who annually visit them. The crowns of the giants themselves are safe from the toot of the auto horn for a long time to come, protected as they are by miles of steep and rugged granite. For long years yet, he who would stand on their hoary summits must "hit the trail" for many weary hours.

Southern California is getting the "mountain habit" in earnest. For years and years it has been all for the beach. When a family took a vacation, they went to the beach. When material circumstances warranted—and often when they didn't—they built a cottage at the beach. But now things are beginning to be different. Many are going to the mountains for their vacations. Still more numerously they go there for week-ends. Not a few are building cottages of their own on land leased from the government in some cañon that lies within the Elfin-Forest.

The Forest Service is helping the good work along by setting aside certain tracts for the purpose, providing a good water supply, building roads and trails, and by maintaining strict supervision over the grounds. A fine example of these government camping grounds is in the Arroyo Seco, near Pasadena. This is a charm-

123. Muir Lodge, Santa Anita Cañon, Los Angeles County: Headquarters of the Southern Section of the Sierra Club: Reached only by Six Miles of Trail.

ing, fern-embowered cañon with chaparral-covered walls and tree-set floor for the first half-dozen miles of its lower length. Above that it becomes a wild gorge out of which comes a fine stream. Nearly four hundred cottages are scattered along the lower course, privately owned, but built on small plats leased from the government at a small yearly rental. The cottages are numbered consecutively from the mouth of the cañon, beginning with 1, for the convenience of the Forest Service officials in their work of supervision. Of course nearly all of the cottages are provided with names that are more to the taste of their owners than mere numbers—such as "Laurel Cottage," "Maple Lodge," "Fern Brook," "Laughing Water," etc. Some of these cottages are as large and as well built as many city bungalows, while others are quite primitive and have not cost more than a few hundred dollars to build.

For some years after the organization of our National Forest system, the policy of the Forest Service was to vacate as far as possible all private holdings within the reserves. This practice, however, has undergone a marked change, for it is now realized that settlers of the right sort are a potent means of fire protection, and a source of strength to the National Forests in every way. So it has come about that considerable areas are being excluded from the forest boundaries from time to time and thrown open to settlement. The character of the lands is such, however, that pioneering of a strenuous sort is needed to subdue them.

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